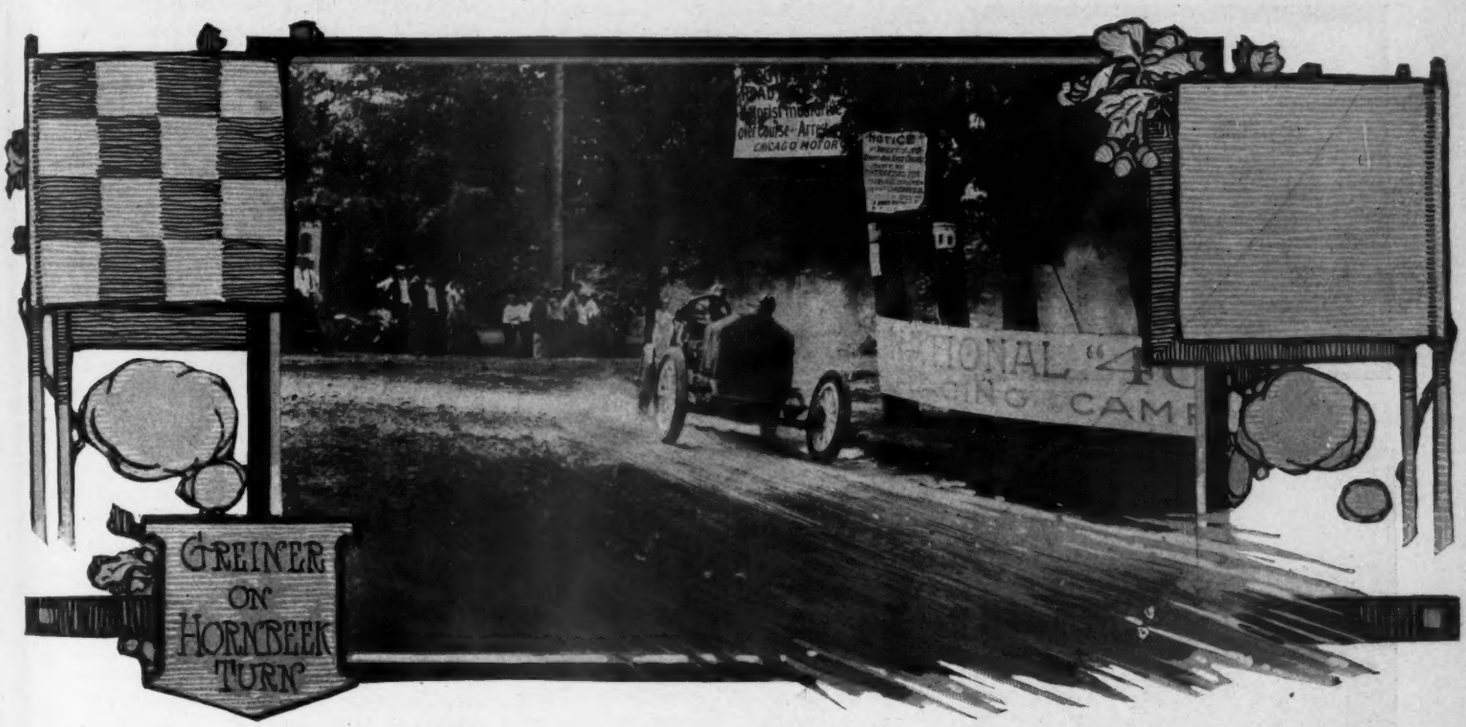
VOL. XVII. No. 8 CHICAGO, AUGUST, 25, 1910 $3.00 PER YEAR

MOTOR AGE

CHICAGO READY TO STAGE NATIONAL RACES



CHICAGO, Aug. 24—Given the same kind of weather as prevails today, the national stock road chassis races at Elgin on Friday and Saturday of this week should to the greatest stock car speed carnival that ever has been run on a highway. The Chicago Motor Club, which is putting on the show, has succeeded in getting together a most brilliant field of drivers, while the cars nominated are thoroughly representative of the American industry, there being only one foreigner—a Benz in the small-car race.

With such stars as Robertson, Grant, Oldfield, Harroun, Mulford and Dawson in the big race of the meet, the 300-mile Elgin National on Saturday, there should be excitement enough to suit the fastidious motor enthusiast. In addition to this galaxy of celebrities there are seven other entries at the wheels of which are men who are more or less experienced in the art of road racing. The main race of the first day, the Illinois trophy, has attracted eight entries, which include the National, Falcar, Kisselkar, Midland, Marmon and Lexington. In the Kane County there are seven, which takes in the Corbin, Overland, Marmon, Marion, Kisselkar and Cino. The Fox River trophy event, in which the cars will compete has eight contenders, three of which are Stavers, two Fords, Warren-Detroit, Cole and Benz. In all, there are thirty-six entries for the four events representing twenty-two different makes of cars. One that came in at the last minute was the third Staver.

The drawing for numbers took place this morning and the luck of the draw gave No. 1 to Arthur W. Greiner, the Chicago amateur, in the Elgin National event in which he will pilot a National 40. The National also was fortunate in the Illinois trophy, No. 1 in that event going to Livingstone, the other driver on

FIELDS IN NATIONAL STOCK CHASSIS RACES

ELGIN NATIONAL TROPHY

No.	Car	Driver	No.	Car	Driver
1	National	A. W. Greiner	8	Simplex	H. Saynor
2	Black Crow	C. Stinson	9	Kisselkar	H. Endicott
3	Lozier	R. Mulford	10	Marmon	J. Dawson
4	Marmon	R. Harroun	11	Matheson	C. Basle
5	Simplex	G. Robertson	12	Knox	B. Oldfield
6	Alco	H. Grant	14	Jackson	E. Schiefler
7	National	A. Livingstone			

ILLINOIS TROPHY

1	National	A. Livingstone	5	Midland	R. Ireland
2	Falcar	W. H. Pearce	6	Marmon	J. Dawson
3	Kisselkar	H. Endicott	7	National	A. W. Greiner
4	Falcar	J. F. Gelnaw	8	Lexington	R. Drach

KANE COUNTY TROPHY

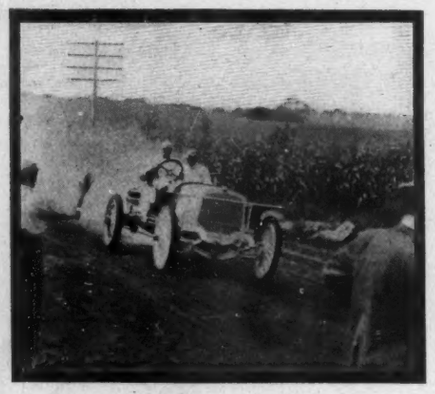
21	Corbin	J. Matson	25	Kisselkar	G. Schoeneck
22	Overland	A. Schillo	26	Marmon	D. Buck
23	Marmon	L. Heinemann	27	Cino	W. Fritzschke
24	Marion	A. Monsen			

FOX RIVER TROPHY

31	Ford	F. Kuilck	35	Benz	E. Hearne
32	Staver	C. Cheney	36	Staver	G. Monckmeier
33	Cole	W. Endicott	37	Warren-Detroit	A. W. Miller
34	Staver	N. Crane	38	Ford	J. Hatch

CHEF AND ASSITANTS IN OFFICIALS' CAMP

NATIONAL CAMP, SHOWING LOOKOUT ON BARN



MULFORD IN LOZIER.

GRANT OUT FOR TRIAL

the team. Joe Matson in the Corbin pulled out the first one for the Kane county trophy for his Corbin, while the Fox River drawing resulted in Frank Kulick in a Ford drawing first position, although his number is 31. The drawing also showed a switching about of drivers. The Marmon people decided to save Harroun for the last day and put Dawson in the Illinois in Harroun's place, while Louis Heinemann took Dawson's seat in the Kane county. The Kisselkar people substituted H. Endicott for Schoeneck in the big race and saved the latter for the Kane county.

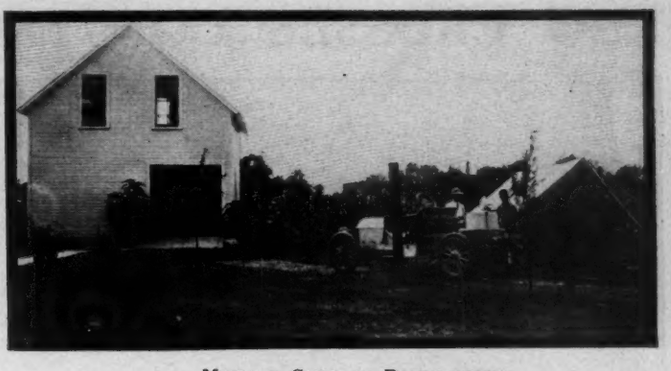
While some of the teams have been in camp at Elgin for more than a week, activities in the training line did not start until yesterday because the course was not completed until the latter part of last week. The circuit was in shape for practice on Friday, but it was decided that it would be better to wait until Saturday. However, when Saturday came there was a heavy rain in the morning so that it was deemed best to postpone the practice until Monday. All conditions were favorable then and some fifteen or sixteen cars were out for their first trial. There was no disposition on the part of any of the drivers to go the limit on their first appearance and most of the 2 hours of practice was taken up in becoming acquainted with the course. However, there were several bursts of speed, and there were several laps at better than 60 miles an hour. Grant, Harroun, Livingstone and Mulford were among those to show the capabilities of the course in this manner. The drivers declared that the circuit was in admirable shape for the racing and the first day at practice proved that the road commissioners had done their work well. The straightaways were hardly disturbed by the cars and not marked up in the least. Two of the corners stood the gaff well, but the turn at Hornbeeks', which is at the southeast corner of the circuit, was cut up some because of the fact that big trees overshadowed the road so the sun cannot get in its best licks. There was more practice Tuesday despite the fact that during the night there was a heavy thunderstorm. This rain, however, seemingly had no effect upon the course, and by 11 o'clock in the morning it was in fit shape for practice. Mulford was the star, his fastest lap being 7:27, while he averaged 8:21 for five rounds.

Easterners who already are on the ground have become convinced that the Chicago Motor Club has discovered an ideal course for racing purposes and those who scoffed at first now are loud in their praises. A. L. McMurtry, chairman of the technical committee of the American Automobile Association, saw at once the beauties of the course and capitulated after swinging around the circuit once. Unhesitatingly he declared it to be superior to the Long Island course, over which the last Vanderbilt was run. He pointed out its many points of superiority and hazarded the opinion that the winner of the big race Saturday will average at least 62 miles an hour. In fact, he backed this opinion with a small wager. The turns, he declared, were better for not being banked in, that it is easier on a car skidding than it is to hit a bank that has been rutted by other cars. C. A. Emise, manager of the Lozier team, when he first struck Elgin, could see nothing remarkable about the course, declaring that it could not hold a candle even to the Briarcliff. But as the circuit continued to improve each day, he gradually saw the light, until today he hauled down his colors, admitting that he had figured on the gravel road pulling up like macadam, whereas it seems to pack harder under the daily practice.

Today, after three sessions of 2 hours each, the circuit greatly resembles a speedway. That it is fast is demonstrated by the practice. Mulford's five laps yesterday excited considerable comment, but today he did even better, his average for three laps being 8:02. This is around 65 miles an hour, but still it does not show the capabilities of the course. Harroun gave an inkling to the possibilities today when he let his Marmon out for a

VIEW OF HOME STRETCH—STAR DENOTES GRAND STAND

WHERE THE BENZ OUTFIT IS LOCATED



MIDLAND CAMP ON BACKSTRETCH

single lap which he made in 7:12, which is at the rate of better than 76 miles an hour. Because of this some of the optimists have declared that the fastest lap of the meet will be in the neighborhood of 75 miles an hour.

An idea as to the probable attendance on Friday and Saturday was had today when 5,000 people turned out to watch the practice. Most of them gathered at the turns, hoping, possibly, to see an accident, but none occurred. The only mishaps so far were yesterday, when Greiner in the National went into the ditch in the backstretch. He and his team mate, Livingstone were practicing passing each other. Greiner was in front and his mechanic did not post him when Livingstone started to come up. Greiner, therefore, was caught by surprise and when the other National shoved its nose alongside Greiner swerved off the road, jumped a culvert and went into the ditch. The frame of his car was badly bent and it is feared it may not be put in shape in time for the big race Saturday. It was Greiner's spare car, though, and he may use the other one for both the Illinois and Elgin National.

There is an unexpected gathering of the clans, showing that the fame of the National events has spread throughout the land. McMurtry had not figured on being here and neither had Chairman Butler, of the A. A. A. contest board. But McMurtry got here yesterday and Butler will be on hand tomorrow. Starter Fred Wagner and W. C. Poertner, of New York, who will work the Warner timing device, checked in this morning. Howard Marmon has been at the course for a couple of days, while Henry Ford is coming to watch Kulick and Hatch in the Fox River trophy race.

One of the features at the course is the commissary, which has been established by Oliver G. Temme, of the Chicago Motor Club, for the officials. Several big tents have been pitched and in them the officials and flagmen sleep, while meals are served in another tent. Temme maintains a chef, a cook and a staff of waiters, and feeds from 100 to 150 people a day. He also will feed the soldiers when they arrive tomorrow under charge of Lieutenant-Colonel Hill, Colonel Wood discovering at the last minute that he could not take command.

There remains little to do before the races on Friday in the way of completing the racing plant. Workmen are busy putting in the pits in front of the grandstand, but they are putting up permanent repair depots. Instead of making the pits of wood they cast in concrete so that in future years all that will be necessary in order to make them serviceable will be to dig out the dirt which will fill them during the year. The grandstands were completed yesterday, for this is no trick, for the stands are the same that were used during the Masonic doings here in Chicago. They are easily transported and by using them the Elgin association saved considerable money.

In marked contrast to other road races, the Elgin people have made every effort to down extortion. Rooming accommodations can be had in the town for $1 a day, while the store keepers have shown they possess civic pride by not shoving up their prices.

MIDLAND OUT FOR FIRST TIME

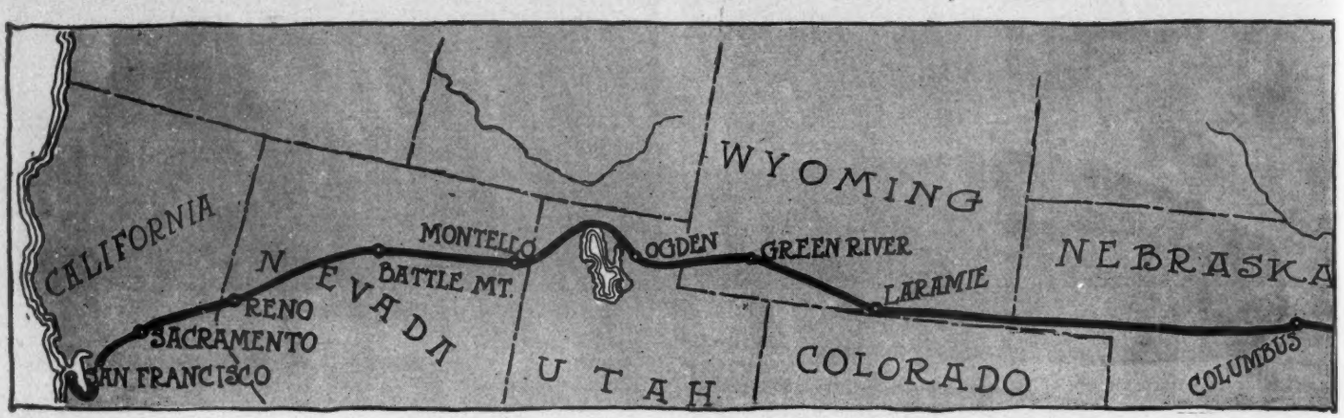
HARROUN ON HORNBEEK TURN

Another thing that will tend to increase the attendance is the fact that popular prices prevail on the course. There is an initial charge of 50 cents for general admission and after that seats may be had in the bleachers for 50 cents, grandstand seats for $1 and box seats for $1.50. Parking spaces are sold for $1 per car, which fact will surprise many who have been accustomed to pay from $10 to $25 for such a privilege. By catering to the masses in this way it is evident that Elgin will draw crowds that will rival the Vanderbilt in size. These crowds will be handled with great facility by the railroads, which plan to run special trains as often as the people fill them.

The course is located within 1 mile of the heart of Elgin, so that even if the Elgin trolleys, which run to the edge of the course, cannot accommodate everyone it will be no great hardship to walk. If there isn't a crowd at the races it will be surprising,

WELL-OILED STRETCH ON THE NORTH LEG

REO CROSSES CONTINENT FROM OCEAN TO



MAP SHOWING ROUTE FOLLOWED BY THE REO IN ESTABLISHING THE NEW RECORD OF 10 DAYS 18 HOURS

SAN FRANCISCO, Cal., Aug. 19—Ten days, 18 hours and 12 minutes is now the transcontinental motor car record. This time was established on Thursday last when L. L. Whitman drove a Reo car into San Francisco from New York and thus cut the best previous record, which, by the way, he assisted in establishing himself in the fall of 1906, by 4 days and 8 hours.

This remarkable feat created much astonishment and for a time many doubted the correctness of the time, but Whitman had taken the precaution to have it officially checked at several leading cities, and also had the car unofficially checked by several notaries at other towns along the route. With little hurrah or blare of trumpets, Whitman and his Reo were checked out of New York city at 12:01 on Monday morning, August 8. It was just 3:12 p. m. August 18 when the Reo left the ferryboat Newark in this city, according to the official checkers, who were newspapermen of San Francisco. Three hours has to be added to this time because of the difference in time between New York and San Francisco; thus Whitman's elapsed time in crossing the continent is exactly 10 days 18 hours 12 minutes. The best previous record was held by the Franklin, which in 1906 reached San Francisco from New York in 15 days 2 hours 12 minutes.

WHITMAN FINDS BUMPER CROPS IN IOWA

ON THE RIVER-TO-RIVER ROAD

Five men were employed in piloting the record-breaker across the continent, with Whitman as the dean. The car was taken along in continuous relays, and in this fashion each of the drivers had an opportunity to secure adequate rest and keep in fine condition throughout the trip. Whitman's companions were W. Hammond, W. Griffith, Dave Fassett and Percy Haycock, while G. J. Thomas, a mechanical expert from the Reo factory, inspected the car at various points along the line in an unsuccessful effort to find any material trouble.

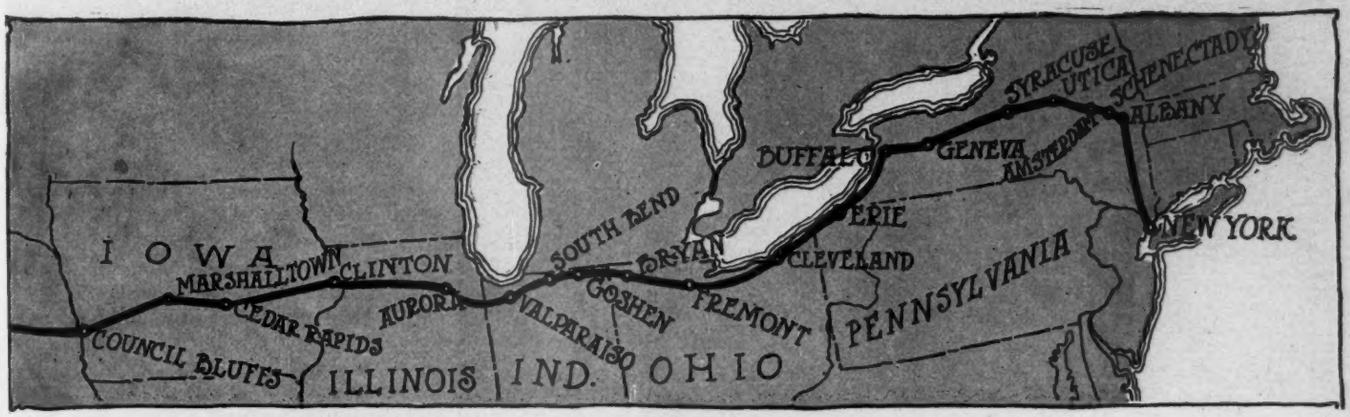
The log of the Reo's trip in its flight against time from ocean to ocean is related by Whitman in the following interesting fashion:

"The Reo's record is about the best that can be made with conservative driving. We set a consistent pace of from 25 to 35 miles an hour, and we never attempted to go faster. I went on the theory that a certain pace would keep me well up to the schedule, and that was the thing to do. We might have beaten it often, but a little fast driving might have invited disaster and spoiled the whole thing. The only accident we had was the damaging of a rear wheel in a ditch near Valparaiso, Ind., but we ran along on it to Cedar Rapids, where we had it repaired. This hour's delay, with another of less than an hour, later, were really the only times that the motor was quiet for any reason except our meals.

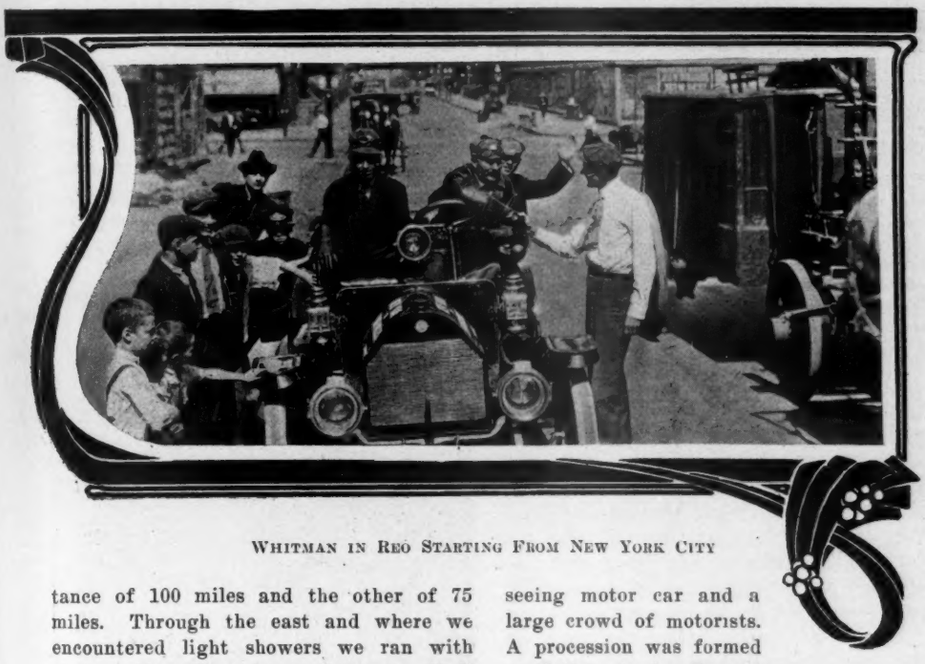
"We left New York at 12:01 on Monday morning, August 8, and checked in officially at Utica, Buffalo, Cleveland, South Bend, Cedar Rapids, Council Bluffs, North Platte, Laramie, Green River, Ogden, Montello, Battle Mountain, Reno, Sacramento and San Francisco. That there might be no question whatever of the authenticity of the record, we checked in unofficially at dozens of other places.

"Our fastest running was done between New York and Chicago. We maintained our gait of from 30 to 35 miles an hour, with hardly a break, and in 4 days covered over 2,000 miles, as far as Laramie, in Wyoming. During all this distance we had little trouble with the roads, striking only 2 days of rain, lasting once a dis-

OCEAN AND ESTABLISHES RECORD FOR TRIP



12 MINUTES FROM NEW YORK TO SAN FRANCISCO, LOWERING PREVIOUS BEST BY 4 DAYS AND 8 HOURS



WHITMAN IN REO STARTING FROM NEW YORK CITY

tance of 100 miles and the other of 75 miles. Through the east and where we encountered light showers we ran with chains. Near Evanston we hit some alkali ground, into which we sank; but we attached mud-hooks to the wheels and pulled ourselves out without trouble.

"The worst places we struck were really in the Bitter Creek section of Wyoming. In one stretch the road was washed out in a dozen or more places, and it simply was a case of getting down the bank and going around, to come up on the other side of the washout. It was not so difficult to drop over the side, although we occasionally hung ourselves up by the middle so that we had to dig the dirt out from under the car. The main trouble was in getting back on the road again when we struck a sheer rise of several feet. The only thing was to get out our shovel and dig. Dig we did—and here we are."

The record-breaker made a fast run from Sacramento to this city. It was met at Pinole by a crowd of local enthusiasts and escorted through Oakland and brought over to San Francisco on the 3 o'clock boat. At the ferry landing the Reo was met with a brass band in a sight-seeing motor car and a large crowd of motorists. A procession was formed and the winning Reo was escorted through the main streets of the city, up to the headquarters of the local Reo representatives, where more music and congratulations were indulged in.

The car reached the city presenting the cleanest appearance of any record-breaker or motor car that has toured any distance. There did not seem to be a bolt loose, and the car appeared ready to turn back and repeat its performance; and in an effort to prove that the car was fit, Whitman left Friday morning for Los Angeles, in an effort to establish the initial record between New York and the southern metropolis.

Whitman in all has made four transcontinental trips in motor cars. His first cross-country trip was made from San Francisco to New York in 71 days. This test was made in 1903 in a 5-horsepower singe-cylinder runabout with a lever steering device, wire-spoke wheels and single tube tires, which was built by R. E. Olds, the designer and builder of the Reo. In 1904 Whitman lowered his transcontinental record in his run from the Pacific ocean to the Atlantic to 32 days, and then in 1906, in a Franklin six-cylinder, he lowered the record to 15 days 2 hours 12 minutes. This record held until he lowered it in this present trip. The Franklin tryout was a relay trip, night and day run, with the assistance of five men from the factory. The present record-breaking trip has been a night and day continuous run, alternated by Whitman and Hammond at the wheel. The only stops made from New York to San Francisco were for taking on gasoline and oil, with the exception of the one made at Cedar Rapids for repairs to the rear wheel. The car will be shipped back from Los Angeles.

Whitman's progress across the continent was watched with interest by the motorists of the Pacific coast. Prior to the start Whitman maintained great secrecy as to the time he would leave New York, but once he left the great eastern metropolis his race against time was bulletined on the windows of every Reo agency in the country. Whitman, however, did not suffer from this, for all the way across the continent he was not molested by the police.

SAMPLE OF WESTERN ROAD

STEARNS THAT SMASHED THE 24-HOUR RECORD

Stearns, 1253 Miles in 24 Hours

SCORE IN RACE WON BY PATSCHKE AND POOLE IN STEARNS

No. Car.	Drivers.	Mileage.
5—Stearns	Patschke-Poole	1,253
8—Matheson	C. Basle-Whalen	1,178
4—Houpt	Martin-Hartman	964
6—Cole	Endicott-Edwards	905
7—Midland	Anderson-Taylor	655
3—Marion	Owen-M. Basle	425
2—Allen-Kingston	Trekas-Cobe	232

NEW YORK, Aug. 21—When the 24-hour race finished, at 8:30 o'clock at the Brighton Beach track last night, sixteen new records had been made. The Stearns driven by Cyrus Patschke and Al Poole, who had never been headed since the pistol sent them off, held them all. These records were as follows: First hour in 24-hour race, 57 miles; 1,000-mile record, 19 hours, 6 minutes, 48 2-5 seconds; and every mark for the hours beginning with the eleventh hour. The distance for the 24 hours was 1,253 miles, being 57 miles more than the Lozier record of 1,196 miles, made in October, 1909, at Brighton Beach, and Patschke was alternate driver with Mulford in that ride. Another curious coincidence is that Al Poole, who was the Stearns driver up at the finish, was also the finishing alternate in the 24-hour race in May, when he drove a Simplex.

The Matheson entry, which Charles Basle and Neil Whalen drove second, with 1,178 miles and the Houpt was third, Stanley Martin up, with 964 miles. Only these three cars survived the long grind out of a field of seven that started.

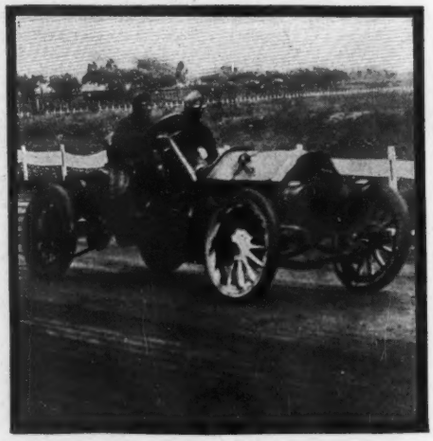
After the Stearns entry had swapped drivers and young Poole got up he seemed to put new blood into the race, which had come to be a mere grind. About 6 o'clock Wally Owen, who had come fresh to the Marion car, relieving Marcel Basle, started out at a terrific pace. He was carrying a mechanician named Williams. He had hardly got warmed up when the big Marion car went through the fence at the identical spot where its sister car went through with Lewis Strang and poor Bradley in the May race. When Williams' wife, who had been standing against the fence, reached him she found that he had been thrown out of the machine and was not very badly injured. But Owen was imprisoned under the ponderous mass and it took some time to get him out.

The crowd rushed across the track in the dawn light, the officials being powerless to stop them, and helped lift the car from Owen's body. He was badly bruised and cut, and at first the surgeons of the field hospitals thought him internally and seriously injured. But later in the day it was said that he would probably be out in a day or so. This put the Marion car out of the race, and as the Allen-Kingston car had dropped out about 2 o'clock with a hopelessly twisted shaft, only five cars remained.

All had their minor troubles with tires and adjustments and were frequently off. But in the twelfth hour the Stearns entry surprised everybody by breaking the world's record for the distance, made by Ralph Mulford in the Lozier car on October 15 and 16, 1909. Each hour the Stearns car added to its gain above that record. It was an astonishing performance after being so far behind the record in the earlier hours of the race.

Until the end of the race the Stearns entry, with Patschke and Poole alternating at the wheel, was beyond the record. The Stearns car turned the 1,000 miles in 19 hours, 6 minutes and 48 2-5 seconds, being 2 hours, 2 minutes and 56 3-5 seconds ahead of the best previous 1,000-mile record, which was made in May last.

The Matheson car, with Charles Basle and Neil Whalen, did remarkably consistent work. It was off the track less than



PATSCHKE IN THE STEARNS

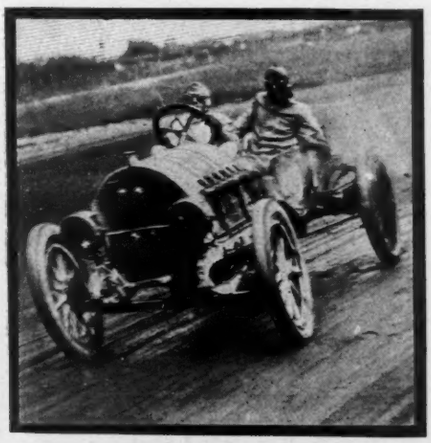
WHITMAN AT FINISH OF TRANSCONTINENTAL RECORD DRIVE IN SAN FRANCISCO

the others, with the exception of the Stearns, and hung on to its place at second without trouble. Its mechanical performance was even and perfect. Probably never before in the history of 24-hour racing have two cars maintained the same relative positions for so many hours as the Stearns and the Matheson did in this contest.

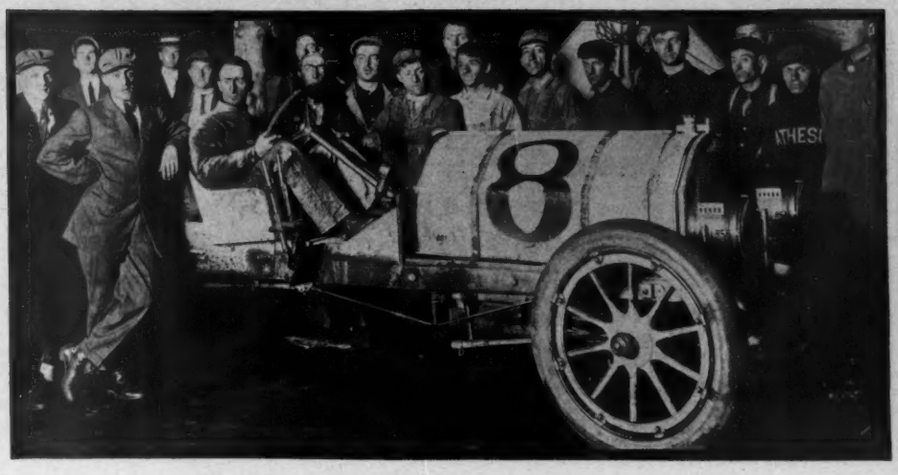
The fight for third place between the Cole and Houpt entries began to be a feature of the race about the tenth hour.

The Cole, driven by Bill Endicott and Louis Edwards, kept doggedly on, with the brown Houpt, its ill luck seemingly at last overcome, giving it battle at every turn. This kept up all the morning, and each camp figured that surely the other must retire for some time, when its own entrant would have a chance to slip in. But this chance never came until 11 o'clock, when the Cole was forced to seek the paddock, where the little green car stayed an hour. For another hour it maintained its place at third; then at 1:30 o'clock another mechanical mishap sent it back to the camps.

Then it was that Stanley Martin saw his chance and determined to lay out a good gap and make himself a strong third.



BASLE IN THE MATHESON



MATHESON THAT FINISHED SECOND AT BRIGHTON BEACH

Twice-Around-The-Clock Contest

He was clocked for mile after mile in less than 60 seconds. The order of Stearns, Matheson, Houpt, Cole was maintained without change all through the sunny afternoon. At 5:30 o'clock the Midland, which had suffered several different kinds of hardship, once sitting patiently for 4 hours till its nurses found a new tuning pin to replace the one it carelessly dropped on the backstretch, declared itself out of the race. This left four to finish, the fight being for third place.

The attendance during the afternoon was most disappointing—probably somewhat diverted by the aviation meet at Sheepshead. Several of the aviators took peeks into the motordome when their aeroplanes veered toward the ocean. But, at that, there were about 6,000 persons in the inclosure, and these were largely augmented by constant arrivals, so that about 10,000 persons saw the finish at 8:30 o'clock in the evening.

At 6:30 the Houpt car plunged through the backfield fence, taking ten lengths out by the posts. A steering knuckle had broken, and the car was out for 50 minutes. It was roundly cheered when it came back in the race. Neither Martin nor his mechanic was hurt. At the twenty-second hour the four in the race had reeled off these mileages: Stearns, 1,148, 52 miles ahead of the Lozier record; Matheson, 1,078; Houpt, 917, and Cole, 821.

Stanley Martin's pluckiness and the remarkable performance of the Houpt car in coming back into the race after 50 minutes' absence were the sensations of the latter part of the race. Martin still held his place at third, and the last hour was enlivened by some spirited brushing, between the Houpt and the Stearns. Even before the last hour of the grind began the Stearns car equaled the distance for the entire 24 hours, 1,196 miles, made by the Lozier last year.

The manufacturers of the Houpt-Rockwell car, which finished third in the 24-hour race at Brighton Beach yesterday, have challenged the Stearns car, winner of the long race, to a 10-mile race, straightaway, for a wager of $5,000. The Stearns company, as the challenged party, will have choice of courses. The stipulation is that the same car be used and the race be driven inside of 2 weeks.

CREW OF TRANSCONTINENTAL REO AT SAN FRANCISCO

MORE INJUNCTIONS

New York, Aug. 22—Injunction has just been served by United States Marshal Henkel on C. A. Duerr & Co., of New York, who formerly were agents of the Ford Motor Co. in New York, restraining them from making, selling or using cars infringing the Selden patent. Duerr & Co. were defendants in the same suit as that brought against Ford Motor Co., and the injunction now granted against them was served on Charles A. Duerr as president of the company, and Lindsay Russell, as trustee in bankruptcy for the company. Charles A. Duerr is now New York distributor for a licensed car, and the effect of the present action will be to enjoin him from selling anything but cars made under Selden patent license.

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The Cooling System

THE cooling system on motor cars is not considered a very intricate one in view of the fact that the mechanical details of parts connected therewith are comparatively simple as compared with the parts of an ignition system. Nevertheless the cooling system is responsible for many troubles in conjunction with the car. The troubles in the cooling system are unique in that they invariably result in heating and which exhibits itself very readily in the loss of power. Roughly speaking, three-quarters of the troubles in the cooling system are due to lack of water. At times this lack of water is owing to not enough in the radiator, at other times it is because of an impaired water pump and at other occasions is due to some stoppage in the water system. Because of the apparent simplicity of the water system of a car many of the troubles are directly due to this. The ordinary driver feels that nothing is necessary but to keep the radiator full, forgetting, as he often does, that incrustations form on the jacket walls and that passages in the radiator frequently become clogged, as well as stoppages which are occasioned by defective gaskets, which partially obstruct the water passages leading into or out of the jackets.

ALTHOUGH simplicity itself, it is a fact that many engineers in their first models have underestimated the cooling requirements of their cars. In the early days of the Glidden tour lack of capacity in the brakes and radiator were everywhere noticeable. Cars that cooled perfectly under ordinary road conditions got into trouble when mountain work was encountered. The results were that these manufacturers met the problem face-to-face. Some put on radiators of higher cooling efficiency, others fitted larger radiators, some installed greater capacity water pumps and others increased the jacket capacity. With many of these makers who were entrants in the early Glidden tours the net result was that the cooling efficiency became adequate for the greatest demands.

IN CONTRAST with this situation is the case of manufacturers who have not participated in important contests since they have entered the manufacturing field. These makers have almost invariably discovered that their cooling facilities have not been adequate, and whenever they have discovered it it has been in the heat of competition, where the lack of cooling has been well advertised before the spectators. It would be much better for manufacturers who have never given their cars thorough road tests to run them for a week on a 20-mile-an-hour schedule through mountain territory, so as to discover the exact deficiency of the cooling system. In some cases this lack of cooling efficiency has been due to the fact that radiator manufacturers prescribe a certain size of radiator for a certain size of motor. This is not a safe course of procedure, because it requires more to cool some motors than others which are rated at the same horsepower. If the cooling requirements of all motors were the same, then the difficulty would cease, but such a uniform condition will not arise.

THIS year's Glidden tour demonstrated that cars with radiator capacity adequate for temperatures of from 60 to 90 degrees Fahrenheit are quite inadequate for work at 110 degrees when this temperature is accompanied by hot winds. Makers should realize that in selling cars for use in hot climates additional cooling facilities should be added, and the exact capacity of such can only be determined by actual use in such climates.

The National Races

THE Elgin national road races which will be held this week by the Chicago Motor Club give promise of being the greatest road races of the year. The thirty-five cars entered are representative of the American industry. This is the first national road event that has taken place west of New England, and every effort has been put forth by the Elgin Road Racing Association and the Chicago Motor Club to make them a success. The value of these races to the industry in the middle west cannot be estimated in dollars and cents. It has been fortunate that the end of August was the date selected because it comes at a time when Wall street and banking interests were trying to divert popularity from the car to investments of other natures. Throughout the west there has been a flood of interest in these races, which will do much to overcome and obliterate the criticisms that have arisen in other places.

UP to the present the west has been without what might be designated a recognized course for road races, but there is a spirit of permanence in connection with the present race. Should this year's contests not prove a financial loss there will be an opportunity for repairing the course for another season, so that the possibility of annual road races will be assured. There is no reason why the west or middle west should not have a recognized course of its road races. Road racing is too expensive to select a new course each year. It costs a great deal of money to put a course in shape, and where the public witnesses a race without paying an admission the possibility of the promotor escaping a big deficit is small. Road racing is recognized as the king of sports in motordom and as such the public should at least be willing to pay something as a general admission, and Motor Age believes the Elgin Road Racing Association by charging an admission of 50 cents to any part of the course is getting at the proper secret of road races. Road races have always proved great sellers of cars and will continue to prove such, and if the industry is to continue with that vim and spirit of progress it has shown during the past the motoring public should do everything to help the racing cause along when it has the chance.

IT is a fact that many clubs which have promoted road racing have ventured but once. Some at the conclusion of the race have faced a loss of many thousands of dollars, and in only one or two cases has a profit been shown. It is to be hoped that the Chicago Motor Club will be able to continue its annual races for the Elgin National trophy, and so long as this is done and the sport conducted in a clean, above-the-board fashion there will be no doubt as to the benefit to the industry in the middle states. The talk among pessimists that road racing will eventually die out is not well founded. It will die out if there is not some financial return to the promotor. Racing on mile tracks has existed only because the promoters have made money, and unfortunately many of these promoters have been professionals and the money instead of going into the coffers of clubs, which are working for the benefit of the industry, has gone into the hands of individuals whose only love for the industry is what they make out of it. It is certain that road racing is vastly superior to racing on mile tracks, and once it can be conducted on the proper business basis, just then will it be insured of that existence which it deserves. No enterprise can exist unless conducted along business lines, and this is just as true in conjunction with road racing as it is with any other sport or business enterprise in other lines.

FRENCH WILL CATALOG CHASSIS SANS TIRES

PARIS, Aug. 15—Rubber being high and tire manufacturers refusing to guarantee prices for a whole year, the motor car manufacturers of France are practically decided to catalog their chassis without tires for the season of 1911. The move has been made at the instigation of the Chambre Syndicale des Constructors, the largest and most powerful trade association in France, and is directed against two or three of the largest tire firms. Among the motor car makers there is unanimity with the exception of the Renault company, which firm appears to be desirous of awaiting events, obviously in the hope that the tire companies will give way.

Although a couple of the largest concerns denounce the car manufacturers for their refusal to place contracts, all the smaller firms and those not having big contracts with the constructors receive the news of the proposed change with undisguised satisfaction. The big French tire manufacturers have made it a part of their policy to control the doings of the car constructors. So successfully has this policy been carried out that in very many cases it is impossible for the manufacturer to supply other than one make of tires, no matter what the conditions may be. An example is given by the manager of the Paris branch of the Goodrich company. On placing a repeat order for three new cars from one of the leading French factories, the customer stipulated that American tires should be supplied. The factory offered another make, without any option, and it was only when the order was about to be withdrawn that the make of tires he desired could be obtained.

With cars sold without tires, users will be free to choose in the open market, thus getting what they consider to be the best tire, and not accepting the one that the manufacturer has the greatest interest in fitting or is practically bound to supply. Selling without tires is made possible from the fact that in France it is the exception rather than the rule for a manufacturer to place a complete car in the hands of a customer. In the medium and high-class trade the chassis only is sold by the car manufacturer, the choice of a body and fittings being left to the customer. Even in the cheap car section there are very few vehicles sold ready for the road, with the exception of tags and gasoline. It is precisely because the French motorist is accustomed to taking delivery of an incomplete vehicle that it is possible for the manufacturers to propose putting on the market all chassis without tires.

Apart from the general tendency among all car manufacturers to under-tire their vehicles, the French system makes it necessary for the manufacturer to quote a catalog price without knowing what load his chassis will be made to carry. Thus he lists a 14-horsepower chassis with 3-inch tires that are quite sufficient for a runabout or light touring body. The customer, however, with very little practical experience, sends the chassis to the body-maker for a limousine or inside-steering body thoroughly suited to the chassis, but far too heavy for the tires on which this latter is mounted. The result is a customer who at the end of a few months is dissatisfied because of the unsatisfactory service obtained from his tires. Complaint to the car maker is only met with the reply that the customer is to blame for putting on such a heavy body.

Under the American system of cataloging a complete article, any attempt to economize by saving money on the tires is likely to recoil on the head of the manufacturer. One of the most important consequences, therefore, of the proposed French plan of selling chassis without tires will be that the evil of under-tiring will disappear.

Coming Motor Events

August 16-27—Munsey tour.
August 24-26—Three-day endurance run of Omaha World-Herald, Omaha, Neb.
August 26-27—Road races of Chicago Motor Club at Elgin, Ill.
August 31-September 8—Reliability run of Automobile Club of Kansas City, Mo.
September 3-5—Speedway meet at Indianapolis.
September 3—Reliability run of North Wildwood Automobile Club, Wildwood, N. J.
September 5—Track meet at Wildwood, N. J.
September 5—Track meet at Cheyenne, Wyo.
September 5—Road race of Denver Motor Club, Denver, Colo.
September 5-10—Track meet at state fair, Minneapolis, Minn.
September 7-9—Four-day reliability run of Automobile Club of Buffalo.
September 9-10—Track meet at Providence, R. I.
September 10—Automobile Club of San Francisco road race, Golden Gate park.
September 10—Mount Baldy road race, Los Angeles, Cal.
September 10-11-12—Track meet at Seattle, Wash.
September 16—Annual hill-climb of Chicago Motor Club at Algonquin, Ill.
September 17—Track meet, Syracuse, N. Y.
September 17—State fair track meet at Syracuse, N. Y.
September 18—Track meet at Syracuse, N. Y.
November 24—Santa Monica road race of Licensed Motor Car Dealers of Los Angeles, Cal.
October 1—Vanderbilt cup race.
October 3—Reliability run of Louisville Automobile Club, Louisville, Ky.
October 6-7—Fall interclub reliability team match between the Chicago Automobile Club and the Chicago Athletic Association.
October 7-8—Speedway meet at Los Angeles, Cal.
October 6-7-8—Track meet at Santa Anna, Cal.
October 8—Fairmount Park road race, Philadelphia, Pa.
October 15-November 2—Show in Paris promoted by Aeronautical Society.
October 15-16-17-18—Annual 1,000-mile reliability run of Chicago Motor Club.

LOS ANGELES, Cal., Aug. 19—A road race which will rank with the Vanderbilt from a racing as well as a spectacular standpoint is planned for November 24 at Santa Monica. This event will be open to the world and replaces the race originally scheduled for September 24. After issuing entry blanks and accepting entries the Licensed Motor Car Dealers' Association, of Los Angeles, has reconsidered and with the returning of all entry fees the entire management of the race was turned over to Dick Ferris, the donor of the large trophy raced for last year, who will act in conjunction with the directors of the association. Ferris has been given entire charge and will be permitted to carry out his own unique ideas regarding the race. From a spectacular standpoint, outside of the race itself, the midnight to dawn carnival of fun will atract national attention. Ferris intends to make this a typical California affair, with the three big races as the crowning feature.

The entire 8 miles of the course will be illuminated and the carnival will begin at midnight. Inside the course there will be dancing pavilions, band stands, a fireworks display, a midway and everything in the way of amusement to appeal to a crowd of fun-seeking merrymakers. A section of the course will be thrown open for a confetti and rose battle and it is the intention to add other entertainment features as they present themselves to the promoters.

The first race will start at dawn. This will be the big-car race. Manager Ferris will be prepared to secure the cars which make the best showing in the Vanderbilt and will especially try to secure the first three cars. The open race will have no restrictions as to car or driver and anything with a motor will be permitted to compete over the 202 miles.

The exact distance of the other races is yet to be decided upon. The big stock car race will go about 150 miles and the small-car race 100. Ferris' idea is to run all three races the same day, figuring that the first will be over before 9 o'clock.

Entries made for the race as first announced by the dealers' association will not suffice. This money has all been returned by Acting Chairman P. H. Greer and new entries will have to be made. Proper blanks will be issued soon and the application for the transfer of the A. A. A. sanction will be made at once.

The race as first announced was restricted to licensed cars, but under the new order licensed or unlicensed cars can be entered. But the race will receive the moral support of the association and one of the ideas being considered is an open air car show the night of the race, each dealer having a display with whatever other special entertainment desired along motoring lines.

PROGRESS OF MUNSEY HISTORIC TOUR

MUNSEY TOURISTS ON THE WAY TO WEST POINT

JUST AFTER THE TOURISTS LEFT BOSTON

BOSTON, MASS., Aug. 18—The third day of the tour proved to be the most uncomfortable as well as the most significant so far in the course of the Munseyites. The route for the day was the shortest so far, 116.6 miles, and the roads were by far the best encountered up to this stage of the run, but without regard to those two important items, the running was filled with interest.

Everybody enjoyed an excellent night's rest at New London, and the start of the tour was made from in front of the Hotel Mohican at 5:46 a. m., after which the cars were ferried across the Thames river and the official run commenced at 7:30 o'clock.

New London was in gala attire to welcome the tourists, but the superb decorations everywhere in evidence were not solely in honor of the historic tour. A secret society had arranged for the annual meeting of its grand lodge on the following day, and the double attraction made State street seem real busy until a late hour in the evening.

The route of the third day lay along the old Indian trails traversed by the Narragansett tribe in its commerce and communication with the redskins who lived further to the west in prehistoric times. Today these trails, once mere footpaths through the forest, have been developed into magnificent highways. The evolution, however, since the days when Roger Williams first cleared a wagon trail from Narragansett bay to the Thames river has been slow. Only since the time of the motor car has it advanced with anything like speed. But today it would be hard to select a finer bit of country highway than that leading into Narragansett Pier and for 25 miles toward Providence.

The pleasant impression given to the general aspect of affairs was dispelled when the caravan entered the capital of Rhode Island. A speed-trap of the most obvious and obnoxious description was planted for the tourists in the outskirts of the city. One of the Brush entrants was the first victim, and prompt arrest was imposed. Then Starter Newmeyer fell under the ban, and was subjected to arrest, and despite desperate efforts to warn the tourists, two or three others were humiliated, although formal arrest was dispensed with in their cases.

The E-M-F pilot car, which was banished from the West Point reservation for breaking the 4-mile-an-hour speed regulation at the end of the first day, suffered an accident after leaving Narragansett Pier. In turning out of the road suddenly to avoid running down a pack of polo ponies, this car was ditched and its front axle was wrapped around a telegraph pole. Nobody was hurt, but the car was put out of the running.

The big Thomas that was ditched south of West Point joined the tour again at Boston this afternoon, little the worse for its experience. From Providence to Boston the character of the going was fine, but the speed regulations were so unusually severe that it required the full time limit in each class to accomplish the 42 miles that lie between the two cities.

Two more cars lost their clean scores as the result of the day's run, and the unfortunate Ohio received additional penalties for its leaky gasoline feed. The penalization charged against the car for its work during Wednesday's run was 25 points for 25 minutes' work in making repairs. Today's penalization for the same cause was 34 points, making the total standing against the car 59 points. The Great Western entry, No. 18, and the Moon, 32, were the other demerited cars. The Great Western was given 2 points' penalty for repairing a minor detail in its ignition system, and the Moon earned a single point for cleaning sand from its gear quadrant.

In addition to the other trials of the day, the E-M-F pilot car was attached on account of its alleged part in frightening a horse just west of New London. Bonds of $400 were furnished and the car was allowed to proceed.

The Pierce-Racine entry, No. 16, traveled all day Wednesday on three cylinders, but today the ignition seemed to be normal. The Inter-State, which suffered as the result of a bit of extraneous metal in the gearcase, only has two gears, the high and the intermediate. The reverse and the low still are out of commission, although a close examination fails to disclose any missing teeth in the gearset.

For 3 hours today the Ohio car leaked gasoline at the rate of 2 quarts an hour, but that car and all the others checked in at night control within the limit.

From Boston to Portland

Portland, Me., Aug. 19—In a driving rain storm the Munsey tourists started the fourth day of the run from in front of the

Hotel Lenox in Boston. As a general thing the roads were excellent clear to the New Hampshire line. In the latter state the going also was fair, and after crossing into Maine the character of the highways was not so good, but the state is greatly interested in road-making, as is evidenced by the fact that on the way from Portsmouth to Portland there were four separate gangs of road-builders at work on the Atlantic boulevard. The route was about 139 miles long, and was laid out through historic scenes. The start of Paul Revere's ride, Bunker Hill and a dozen other spots of historic moment were passed. At Worcester, the board of trade tendered the heartiest welcome so far received by the tourists. Beverley, the summer home of President Taft, also was on the route. In Maine the reception was even more cordial than it had been in Worcester, and all along the beaches, the summer resorts turned out in force to greet the travelers. The night control was reached in the middle of the afternoon, and the party was distributed about among three hotels.

The results of the day's run found one more perfect score possibility spoiled. The Staver-Chicago, which had trouble earlier in the contest with a differential bearing, but which had been scored perfect up to today, suffered a broken spring, and while making the necessary repairs to the spring it was decided to repair the differential bearing as well. All told, the car was laid out for 2 hours and 7 minutes, and was 42 minutes late checking in at Portland. This brought about penalties aggregating 169 points.

The Inter-State, which was penalized for time spent in picking bits of metal from the gearcase prior to today, was given 62 additional points for the same offense against the rules. Several pieces of metal were found, including a bit of phosphor bronze, and the car was repaired so that all its gears are now working smoothly. After this work Mr. Dill announced that the reverse and the low, which had been out of commission, were all right again. The score stands now with twenty-one perfect records.

Across State of Maine

Bethlehem, N. H., Aug. 20—Across the state of Maine and half way through New Hampshire was the course of the fifth day's running of the Munsey tour. The roads were smooth enough, practically all the way, but the grades and turns proved too much for several of the cars, and accomplished the complete downfall of one of them. It was the Maxwell runabout that succumbed just after passing through Crawford's Notch, and with nothing like a real obstacle between the car and night control. The camshaft broke on the exhaust side, stripping the gears and messing up the mechanism of the car so that it was withdrawn from competition, the penalty assessed being 1,000 points.

The Elmore, privately owned, also met with its first setback during the day. A broken terminal in the ignition required 3 minutes' work to fix, and the motor was stopped during that time. The net result was 6 demerits. The Staver-Chicago again was heavily penalized when the upper half of the left rear spring gave way. The penalty was fixed at 73 points. This gives the Staver a total of 242.

The Moon car also added a single point to its score when the jarring and swinging necessary to make 20 miles an hour rendered 1 minute's repair work necessary on the rear fender. This gives the Moon a total of 2 points.

MUNSEY TOUR PENALTIES

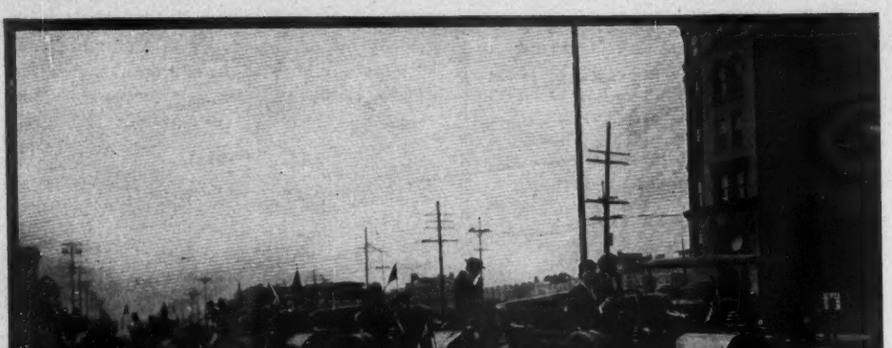
Sixteen cars had perfect scores at the night control at Binghamton. Penalties to this place were: No. 21, Ohio, 59; No. 18, Great Western, 2; No. 32, Moon, 2; No. 23, Staver-Chicago, 242; No. 49, Inter-State, 62; No. 27, Crawford, 867; No. 30, Ford, 8; No. 13, Brush, 3; No. 10, Warren-Detroit, 4; No. 26, Maxwell, No. 28, Glide, and No. 9, Elmore, withdrawn.

One of the Fords is in trouble with a loose motor base. The Columbia and Pierce-Racine still have clean scores, despite loose connecting rods in one and ignition trouble in the other. The wounded Maxwell car was towed helplessly to the Mount Washington garage by the Brush runabout used as the photographer's car. All the cars not specifically mentioned are apparently in as good condition as when they started. The Thomas press car, that met with mishap near West Point last Tuesday, was repaired by Driver George Miller and was rushed over the course to join the caravan at Boston. This the Thomas was able to do, and has been in a prominent position in the line ever since.

The tour proved to be particularly popular in Maine, and clear to the western boundary, wherever there was a hamlet, crowds gathered to cheer the procession. The course in New Hampshire through the heart of Bretton woods and the White mountains was by far the most picturesque of any so far. The level of the highway rises constantly from the state boundary until the course lies between solemn look-

BRUSH STOPS FOR PICTURE NEAR WEST POINT

OHIO RUNNING ON ROAD NEAR NEW LONDON



LINEUP OF THE MUNSEY TOURISTS AT BOSTON

ing cliffs, clad in summer verdure and rising precipitously from the road, which is fully 2,000 feet above the level of Casco bay at its highest point. The way passes through what is called Crawford's Notch, a gash in the mountain which has been cut down materially so as to make a passable wagon trail. From the Notch to Bethlehem the roads were excellent, and the twenty-seven cars left in the contest had no difficulty in reaching control within the time limit. There are nineteen clean score cars remaining, but all indications point to half a dozen additional penalizations before the long run of next Tuesday is accomplished.

Run to Burlington

Burlington, Vt., Aug. 22—Special telegram—Every city and village located on the route of the Munsey tour today outdid itself to show honor to the tour as an expression of good will toward the motor. It only has been since the vogue of the motor that Vermont has had any east and west roads of which to speak, and the people seem to realize the importance of the work accomplished.

The day's run was comparatively short, only 102 miles, but it was mostly on a sharp downgrade in New Hampshire and equally sharp upgrade in Vermont. St. Johnsbury and Montpelier turned out most strongly to do honor to the run, and the Automobile Club of Vermont held its annual parade during the midday control, and a few of the Munsey cars appeared in line.

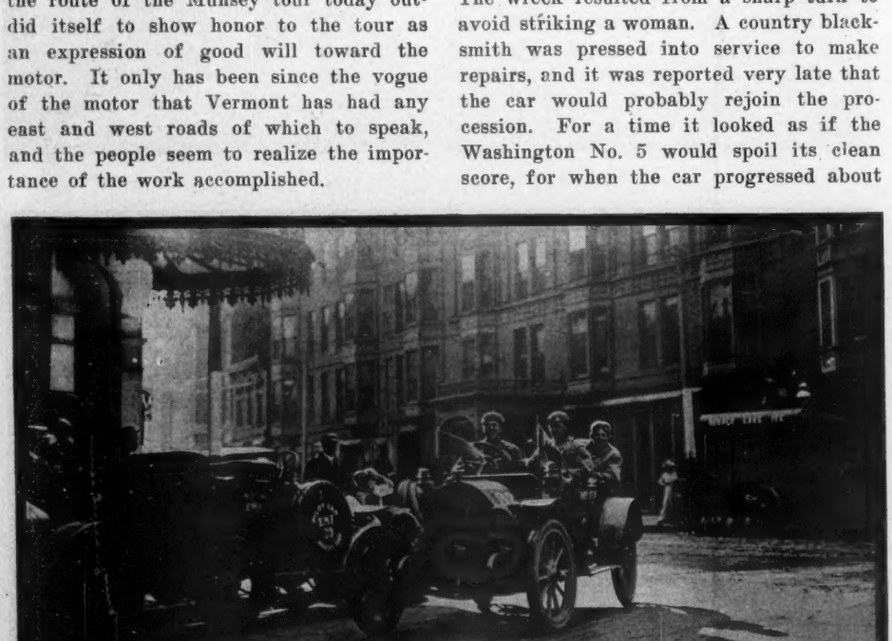
The day proved to be a serious one for several of the cars, and one was badly wrecked while approaching Burlington. This was the Great Western, which had done very well to date. The car had a 2-point penalty already, but up to midnight the number of demerits to be charged up had not been fixed, as the report on the accident had been delayed. The wreck resulted from a sharp turn to avoid striking a woman. A country blacksmith was pressed into service to make repairs, and it was reported very late that the car would probably rejoin the procession. For a time it looked as if the Washington No. 5 would spoil its clean score, for when the car progressed about 5 miles out from Bethlehem the water ran low and it was necessary to replenish it. Carter explained that he had filled up in control and that the water probably had leaked out as the result of the work of some practical joker. This view of the case, or one equally probable, was evidently taken by the officials, for the car was reported with a clean score. The Crawford broke its clean score today when it developed transmission trouble and difficulty with its rear axle. The car was so seriously affected that it was 435 minutes late at the noon control, and upon technical examination an additional 432 points were charged, making the total 867 points. Ford car No. 30 was penalized 8 points for work done in adjusting a strut rod bracket and is now going along nicely again. Elmore No. 9, which was penalized 6 points yesterday, was withdrawn today. It was learned that the factory had neglected or refused to file a stock car certificate covering the model of the car, and as the entry was only accepted with the provision that such a certificate should be filed before the end of the trip, the car had to be withdrawn. It is continuing as a non-contestant.

Route to Saratoga Shortened

Saratoga, N. Y., Aug. 23—Special telegram—The route today was materially shortened by order of Referee Ferguson, and instead of circling to the north of Lake Champlain the cars were ferried across to Bluff Point and the course was reduced to 137 miles. The Glide was the chief sufferer of the day. The car burned out a bearing on the main shaft and loosened its connecting rods. It was found inadvisable to come through farther, and the car was withdrawn from competition by telegraph. The Great Western, that suffered a smashup yesterday in avoiding a woman, reported to the referee at 4 o'clock this morning and started with the procession. It kept up well all day and finished on time at this city. No further penalties were charged. The Columbia and Pierce-Racine are going along as smoothly as they did the first hour of competition. The penalty against the Great Western car is still to be announced.

Saratoga to Binghamton

Binghamton, N. Y., Aug. 24—Special telegram—After a hard, dusty run on 165 miles from Saratoga, the tourists arrived at this place without materially changing their scores. About half of the road was magnificent, but the rest was rough and dusty to an uncomfortable degree. The Maxwell runabout that was disabled in the heart of the White mountains picked up the procession today, and while withdrawn from the contest, is continuing as a press car. There were sixteen clean scores this morning and tonight all the contesting cars have reported. Arthur Newmeyer, starter of the tour, suffered a tumble from his car somewhat similar to the one that Ferguson took last year. Mr. Newmeyer slipped from



MOON CAR AT CHECKING STATION AT PORTLAND

the running board and rolled downhill, but was not hurt save for a few bruises and a shaking up, the penalty against the great western has not been fixed. Brush 14 checked in on time. The Krit reported with a broken wheel and may be withdrawn.

ATLANTA MEET OFF

Atlanta, Ga., Aug. 20—The local meet planned for September on the Atlanta speedway is off, owing to the inability of the local track officials to land the match race they wanted as an especial feature. Now all energies are being bent toward making the fall meet of November 3, 4 and 5 a greater success even than that of last fall. Two long races are assured by the fact that the Coca-Cola trophy and the City of Atlanta trophy are again to be raced for. Both must be won three times in succession to become the property of the winner. It also is possible that there will be another long race for a valuable trophy and an especially large cash prize, open to cars which take part in the grand prize. Whether or not this race will be run will depend a good deal on the number and class of the probable starters in the big event. Manager J. M. Nye recently visited New York and while there solicited entries with considerable success. He is confident of landing Benzs, Fiats, Loziers, Mathesons, a Mercedes, several S. P. O.'s and a Houpt-Rockwell from New York. Later he will canvass the factories of the country.

BUICK PLANTS RESUME WORK

Flint, Mich., Aug. 24—The Buick Motor Co. has begun to take on its regular force of employes again after 2 weeks of comparative inactivity given over to the taking of the annual inventory and the making of preparations for the season of 1911. The business year of the company begins October 1 and between now and that date the working force will be gradually increased to the requirements of the various departments of the big plant. When the factories were closed it was stated that they would not open before September, but it is believed that large orders have forced the company to resume work. Work has been resumed in factory buildings Nos. 1, 2, 3, 4, 5, 6, 7, 10 and 14. As soon as power is available from the new power house of the Flint power syndicate operations will be resumed in factory No. 11, the motor department. The most pronounced activity is evidenced at factory No. 14, where the new model 14 car is being manufactured. The first shipment was made this week.

CATSKILL RELIABILITY PLANS

New York, Aug. 22—Since the Glidden tourists traversed French Canada and drive down through Maine, in 1906, and found everywhere along the route the countryside alive with the populace from miles around to welcome them, there has been no tour or contest with so much invitation for motorists to join, just for the sport of it, if for no other reason, than the Catskill reliability contest and hill-climb which will take place September 10 to 12 inclusive. The affair being of a combination nature will afford the cars a thorough road test as well as a hill-climbing test. The Motor Contest Association, under whose auspices the contest will be held, has issued entry blanks and judging from the way entries are coming in the affair will have a good field of contestants. The contest will start from New York on Saturday morning, September 10, at 7:30 o'clock, but the cars will not check out until assembled in line at Edgewater, N. J. The tourists will rest on Sunday in the Catskills and on Monday the hill-climb will take place. The Kaaterskill Clove mountain, which will be the scene of the climb, has been specially prepared for the event. A fine program has been arranged for the hill-climb. The classification will be by price and piston displacement in cubic inches which is in accordance with the schedule of the rules of the contest board of the American Automobile Association. A car to be eligible for competition in the hill-climb must be a contestant in the tour except for one event which is open to residents of Catskill and vicinity. The start in all events in the climb will be from a rolling position. The Warner electric timing device will be used in recording the time of cars. Entries close September 7 at noon, with E. L. Ferguson, manager of the Motor Contest Association, 1777 Broadway, New York.

CROWDS WATCH MUNSEYITES AT PORTLAND

APPERSON WINS ON SPEEDWAY

Cheyenne, Wyo., Aug. 23—Special telegram—The Cheyenne Automobile Club held a meet on the Speedway here today, the feature of which was a 200-mile race that was won by Harry Ball in an Apperson in 2:58:28. Ball put up a good race, making only one stop, and that for tire trouble. C. J. Corkhill in another Apperson was second to Ball, while Eaton McMillan in a National was third. Ball, who averaged 67.3 miles per hour, won the Denver road race 2 years ago.

MUNSEY MATHESON CHECKING AT WEST POINT

Gossip of Motor Trade in Detroit

DETROIT, MICH., Aug. 22 — While alarmists are still trying to persuade themselves and others that the industry is going to the bow-wows, local manufacturers are minding their own affairs and closing contracts for their 1911 output with excellent results so far, and the work of organizing new companies and extending the facilities of established concerns goes on without let-up.

Several new corporations are in the making here. Two or three have filed articles within the past few days; the others will follow suit in due time. Among the former is the Whitney Motor Car Co., with a capital stock of $150,000, which has opened temporary headquarters in the Ford building. It is the company's intention to manufacture a two-cylinder, gearless, friction-drive roadster to sell at a low price. A model car already has been turned out. The officers of the Whitney Motor Car Co. are: President, Brock C. Eby; vice-president, J. C. Hudson; secretary, H. C. Whitney; treasurer, George O. Tackles.

Detroit had its first glimpse of the latest novelty in motor vehicles, the three-wheeled commercial car, Saturday. The inventor, W. G. Wagenhals, has come here from St. Louis, Mo., and, being convinced that Detroit is the logical manufacturing center, is trying to interest local capital in the organization of a company to make his machine. There is every prospect that he will succeed, for all who have seen his three-wheeler have been impressed by its utility and its economy features. Mr. Wagenhals has figured out that he can put his car on the market at a low price and still make a substantial profit. Several machines already are spoken for and unless some unforseen obstacles arise to block his organization plans he hopes to have a plant in operation here not later than the first of the year. The board of commerce is cooperating with him in the matter of securing a tentative site in this city.

Rival for Street Cars

If plans now under way materialize, the motor car may take a leading part in the settlement of Detroit's vexatious street car problem. Adolph Gerhard, a former justice of the peace in Hamtramck township, is promoting a $100,000 corporation to operate a system of motor bus lines in competition with the Detroit United Railway, carrying passengers at 3 cents a head and giving them transfers in the bargain. The project, according to Mr. Gerhard, is receiving much encouragement. That such a line would be well patronized is certain; whether it would pay on a 3-cent fare basis is another question. The D. U. R. claims it cannot afford to carry passengers at that rate of fare, although it is successfully operating three such lines.

The Culver Chain Co. has been incorporated with a capital stock of $50,000, the principal stockholders being William Culver and Arthur Taylor, both of this city. The company has secured a building at 140 and 142 Madison avenue for manufacturing purposes and expects to begin operations within a very short time.

Two other tire companies are among the recent incorporations. The Puncture Proof Tire Co. already has opened for business at 229 Beaubien street. It manufacturers punctureless pneumatic and solid tires for commercial vehicles as well as for pleasure cars. L. J. Haynes is secretary and treasurer of the concern. Another company with a puncture-proof proposition is the Cooley Automobile and Tire Co., which filed articles of association with the secretary of state last week, and which will locate in Detroit. The claim is made that its tire will have a life of from 25,000 to 35,000 miles. It contains neither air nor springs, but is said to be as resilient as a pneumatic. It is also the intention to manufacture cars equipped with these tires. John B. Chaddock is president; L. D. Cooley, vice-president and general manager; F. H. McMullen, secretary, and B. C. Bastedo, treasurer. These, with George A. Erskine, constitute the board of trustees. The capital stock is $50,000.

Truck Company Incorporated

The recently organized Universal Motor Truck Co. filed articles with the secretary of state during the past week, capitalizing at $350,000. Work is already under way on its factory, which will be located on the Grand Trunk railroad, between Farnsworth and Thedore streets, in the northeastern section of the city. The site comprises 3½ acres.

The Van Dyke Motor Car Co. turned out its first cars last week. By fall the output will be twenty-five cars a day, it is announced.

There is considerable curiosity in local manufacturing circles as to what use the E-M-F company will make of a four-story building at Fourth and Abbott streets, which it has just leased from the Detroit Bag Co. through a local real estate agency. The bag company is moving out and the E-M-F evidently is planning to move in, though no announcement has been made as to the purpose for which the building will be used and no information is available at the present writing. One rumor is to the effect that the company is about to spring a new type of car, but so far as can be learned the rumor does not arise from any authoritative source.

The E-M-F, from information that is reliable and well-nigh official, has been meeting with extraordinary success in closing contracts for its 1911 output. Up to date these contracts call for 11,000 cars and all have been closed within the past 30 days. Rapid progress is being made on the immense addition to plant No. 1. The plans for taking care of the Studebaker interests on the Clark avenue site are temporarily at a standstill, the company having reached no agreement with the Union Depot and Station Co. with regard to the tunnel which it is planned to run under the railroad tracks connecting the Studebaker site with the Flanders plant on the south.

Ground will be broken this week for a $30,000 addition to the plant of the Ford Motor Co., Ltd., of Walkerville, Ont., located on the river front in Walkerville. The plans call for a two-story building of reinforced concrete, 70 by 40 feet, with basement, which will be used as a machine shop. The first and second floors will be given over, respectively, to the brazing and painting departments. The addition will give the company 20,000 extra square feet of floor space. The Ford company's new sales building at Woodward avenue and the East Grand boulevard begins to loom up very conspicuously. The concrete supports for the third floor are now being put in.

A total of 1,275,000 square feet is represented by the six largest motor car and accessory plants now in course of erection in the city, some of which are nearing completion. This is distributed as follows: Dodge Brothers, 367,000 square feet; Alden Sampson Co., 316,000; Lozier Motor Car Co., 200,000; Hudson Motor Car Co., 200,000; Anderson Carriage Co., 100,000; Anderson Forge and Machine Co., 92,000.

The new garage of the Goodfellow Tire Co. on the East Grand boulevard, just east of Woodward avenue, is about completed and is one of the most ornamental as well as one of the roomiest in the city. It is two stories high, of brick and steel construction and the cost will be about $16,000. The company will have its offices on the second floor.

Following the reorganization of the Abbott Motor Car Co., the plant has just been closed down for 2 weeks for an inventory and a complete audit of the company's books. M. J. Hammers, the new general manager, will take advantage of this opportunity to familiarize himself with the details of the business and will collaborate with the department managers in mapping out plans for increased efforts the coming year.

Bourquin Makes a Change

A number of changes in administrative positions are chronicled for the past few days. James Bourquin leaves the Chalmers Motor Co., where he has been superintendent, to become general factory manager of the Paige-Detroit Motor Car Co., which recently increased its capital stock from $100,000 to $250,000. Mr. Bourquin is a graduate of the engineering department of the University of Michigan, '04, and entered the employ of the Chalmers company when it was organized as the Thomas-Detroit. Previously he was associated with the Olds Motor Car Co. in Lansing and before that with the Peerless Motor Car Co. in Cleveland.

An announcement of more than ordinary interest in local car circles is that Edward

H. Broadwell, vice-president of the Fisk Rubber Co., has become identified with the Hudson Motor Car Co. in an important capacity. He has acquired considerable stock in the company and has been elected vice-president. As such he will have complete charge of the selling end of the business. He will assume his new duties September 1. Mr. Broadwell has returned to New York to wind up his affairs as secretary of the rubber company.

Edward R. Hewitt, of New York, son of a former mayor of the metropolis, and designer of the Hewitt truck, comes to the Metzger Motor Car Co.'s plant in the near future as technical expert. He is a brother of Peter Cooper Hewitt, one of the leading electricians of the world. The Metzger company now has 600 men at work, including 200 taken on this morning, and expects to be running full capacity by September 1.

Close on the heels of the estimate of 500,773 as the population of Detroit and its nearest suburbs, given out by R. L. Polk & Co. last week, comes the official announcement from Washington that the census returns give Detroit alone, without its suburbs, 465,766 people, an increase of 63 per cent since the last census. For this remarkable showing the industry receives a large share of the credit, as previously indicated.

Acting on the petition of certain creditors, filed several days ago, Referee in Bankruptcy Harlow P. Davock has adjudicated the Demot car company bankrupt. The adjudication was made by the referee in the absence of Judge Swan, of the United States district court.

OBJECT LESSON FOR FARMERS

Oklahoma City, Aug. 21—The motorists of Oklahoma are to set a road-making pace in the state that is hoped will stimulate the farmers and county boards to action. This state has some of the best natural roads in the United States, but so far little has been done to better them. The first blow has been struck by the Muskogee Motor Club, which now is busy in a strong campaign for better highways. A stretch of 2 miles long leading out of the city on one of the principal thoroughfares was selected for the first experiment, and so much better was the result than was expected that this organization is now pushing things with a high hand. When the ground was in the right condition six King split-dog drags were purchased, hitched to motor cars and the 2 miles thoroughly dragged. But a few hours were required to accomplish the result, a perfectly smooth and fine stretch of country road. The fifty members in this club have been divided into squads, and each squad is to be given a section of road to improve. The material in these drags cost $4.30 when purchased at the lumber yard and the hardware store, but can be built for practically nothing by the farmer who has access to logs. Prizes will be given to the squad that makes the best showing.

Winners in the Brooklyn Reliability

NEW YORK, Aug. 22.—A. R. Pardington, who officiated as referee in the 2-day reliability contest conducted by the Brooklyn Motor Vehicle Dealers' Association last week, has finished his arduous task of verifying the records of the officials and makes announcement of the winners of the eight trophies contested for in the two sections of the contest. None but the officials and Mr. Pardington know of the great amount of work necessary to find the consistent running time of each car. The running time between each known and the many secret controls had to be figured out very carefully. Penalizations were imposed for lateness and for early arrival at controls. Two points per minute was the penalty imposed for cars arriving ahead of time at each control and 1 point for each minute was the penalty for lateness. With few exceptions the contestants adhered to their miles per hour running schedule and the total penalties were small. The awards in the contest section are as follows:

Martin-Evans trophy, competed for in division 1A, open for cars that sell for $800 and under—Won by No. 14 Hupmobile, driven by D. M. Bellman.

Brooklyn Daily Times trophy, competed for in division 2A, open for cars that sell for $801 to $1,200—Won by No. 4 Hudson, driven by W. H. A. Bruns.

Standard Union trophy, competed for in division 3A, open for cars that sell for $1,201 to $1,600—Won by No. 26 Crawford, driven by W. J. Houldcroft.

Julius Bindrim prize offered as a second trophy in division 3A—Won by No. 8 Maxwell, driven by E. T. Bloxam, who made the next best time in this division.

Kingsley Swan trophy competed for in divisions 4A, 5A, 6A and 7A, open for touring cars that sell for $1,601 and over—Won by No. 21 Columbia, driven by G. M. Wagner.

Brooklyn Life trophy, competed for in divisions 4A, 5A, 6A and 7A, open for runabouts that sell for $1,601 and over—Won by I. C. Kirkham, who drove No. 1 Columbia car.

In the tourist section the best consistent running time was made by the Ford, No. 50, to which is awarded the Brooklyn Daily Eagle trophy.

The next best running time in the tourist division was made by No. 52 Cadillac, driven by H. G. Woodworth, who wins the Long Island Automobile Club trophy.

Mr. Pardington highly commended the consistent running of the following cars: No. 2 Haynes, No. 3 Locomobile, No. 12 Auburn, No. 16 S. G. V., No. 19 Speedwell, No. 22 Chalmers, No. 24 Haynes, No. 27 Herreshoff, No. 5 Ford and No. 9 Ford. The above named cars had small penalties.

It should be mentioned here that the important factor of the Brooklyn contest was not the consistent running but perfect road work and the cars that finished the contest without any mechanical trouble each receives a certificate of merit. The consistent running idea was inaugurated to evolve a winner among the cars that finished the run with perfect scores. The following cars have perfect scores: No. 1 Columbia, No. 2 Haynes, No. 3 Locomobile, No. 4 Hudson, No. 6 Inter-State, No. 7 Stevens-Duryea, No. 8 Maxwell, No. 11 Winton, No. 12 Auburn, No. 16, S. G. V., No. 17, E.-M.-F., No. 18 Kline, No. 19 Speedwell, No. 21 Columbia, No. 22 Chalmers, No. 23 Midland, No. 24 Haynes, No. 25 Maxwell, No. 26 Crawford, No. 30 Pullman.

No better method for awarding trophies and for eliminating speeding could be devised, it is claimed, than was inaugurated by the Brooklyn dealers in their contest. Contestants were told how many miles per hour to travel and were given an approximate mileage to controls. Numerous secret controls were established along the route and the tourists passed them by unaware of the fact that a checker had taken their time. Several cars were stopped and the secret control checker took odometer readings to compare mileage distances. Odometer readings were taken also at known controls and thus the accurate mileage distance between controls was accurately gotten. It was the secret control checking that was responsible for penalizing the majority of the cars. Referee Pardington, F. G. Webb and L. T. Weiss, of the technical committee, cut the course several times and secretly checked the cars at various points along the route.

UNIQUE ROAD LESSON

Lancaster, Pa., Aug. 20—Pick and shovel day, an event where every member of the Lancaster Automobile Club was expected to turn out with pick and shovel to improve the worst stretch of road between that city and Philadelphia, was observed on Tuesday, when about 150 men were at work on the road. Their accomplishment has never been equaled by another club in the United States. Drain pipe had previously been purchased and these were in stalled by the workmen. Martin Rudy, chairman of the good roads committee of the club, had charge and among those who turned out to labor under him were professional and business men, road officials and residents of the neighborhood. A defeated road supervisor candidate was among those who swung pick or wielded shovel, having joined as a volunteer to learn practical road-making. The supervisors of the township through which the road passes were furnished with a motor car to inspect the progress of the work. Success crowned the efforts of the club and even more than was anticipated was accomplished. All the dangerous and unnecessary water-breakers in a 3-mile section of road were eliminated and underground drains established where necessary. In addition to removing the breakers the club sought to make improvements of a permanent nature to the road. The supervisors were in hearty concurrence with everything done and so forcefully impressed with the thorough manner in which the motorists worked for the improvement of the road extending through their township that they have decided to make still further improvement to the road. The idea of the Lancaster club has met with universal approval.

Will Follow Old Santa Fe Trail

TRINIDAD, Colo., Aug. 22—Over the historic Santa Fe trail where 60 or more years ago the advance guard of civilization wended a toilsome, adventurous, danger-ridden route into and beyond the fastnesses of the Rockies, 300 or more motor enthusiasts of Kansas City, Mo., and vicinity will journey during the closing days of August and the first days of September as far as Raton, N. M. From Raton the tourists will backtrack to Trinidad, the metropolis of southern Colorado, then go north to Colorado Springs and home again. The journey is the annual trophy tour of the Kansas City Star and the Kansas City Motor Club. Nowhere in America is there a stretch of highway more replete with historic interest and variety of scenic beauty.

It was not without an effort that the tour committee was induced to log the route west of La Junta and as far as Trinidad and Raton. The activities of the Trinidad Motor Club and the chamber of commerce and the business interests of the southern city of Colorado were largely responsible for the action. The Trinidad boosters not only succeeded in impressing the committee with the scenic and historic interest that would attach to the trip, but moreover promised the tourists to improve the roads between Trinidad and La Junta and arrange novel and hospitable entertainment. In carrying out the promise, the club has secured a new steam road-making machine with which it is improving the roads between here and La Junta. Besides, the citizens have arranged to furnish a confetti car, a pilot car from La Junta to Trinidad and Raton, a distance of more than 100 miles; they have prepared a careful log over this portion of the historic route, set stakes to further mark the trail and have made arrangements to provide free accommodations at noon stop and a buffet lunch. These mountaineer motor and good roads enthusiasts do things up in shape when they start out.

The highway between Trinidad and Raton, which follows closely the historic Santa Fe trail is a remarkable drive. Interesting as is the past history of the Santa Fe trail, associated as it is with the adventures of Kit Karson, Charles St. Vrain, Lucien B. Maxwell, Dick Wootton and a host of other pioneer Indian fighters and scouts, the recent rejuvenation of the road, the manner in which it was transformed from a rutty trail to a well-ballasted boulevard, leading over the tortuous Raton pass with the wonderful panorama spread out for the gaze of the traveler, is none the less interesting. It is the story of achievement along the line of good roads improvement that has at once demonstrated the value of convict labor in such work, what an energetic and united, albeit, a small community of boosters can do when they set themselves about it and finally, that even though the initial expense of such work is large it is bread upon waters.

The good roads movement in this part of the southwest may be said to have had as its inception when Casimiro Barela, the dean of the Colorado senate, succeeded in securing the passage of his bill permitting the use of convicts in the construction of roads and an appropriation of $5,000 to carry out the experiment. But a small stretch of road had been built when the money was used up, the larger portion being used in the buying of material, tools, mules, tents, food, etc. There was no more money forthcoming from the state, but the experiment had proved a success and rather than allow the work to stop at that point, the citizens of Trinidad and Las Animas county raised $5,000 to continue it. Before this money had been used up, however, the state began to sit up and take notice as also had New Mexico. So impressed, in fact, were the New Mexico authorities with the achievements in Las Animas county that they at once set about building a road by the similar employment of convict labor in extending the road from the Colorado line down the south side of Raton mountain to the pretty little city of that name.

The road was built. The citizens of Las Animas county, Colorado, and the territory of New Mexico proved that the use of convict labor in road building was feasible. More than this, Warden Cleghorn of Colorado proved that men who were permitted this work, made no effort to escape when they were allowed the freedom of the hills and the open air. Before the camp was moved from the county it was without guards day or night, Cleghorn cultivated an esprit de corps that made everyone his brother's keeper. They realized that if any got away it meant ultimate failure for the experiment and none was more anxious than they to see it succeed because for the prisoners it meant sunshine, good food, a view of the Rockies and the privilege of keeping their muscles hard instead of a slow rusting behind the iron bars and stone walls. Prisoners still are being used in road work in Colorado and the good roads' movement is gaining impetus every day, thanks to the initiative given the movement by the hustling folk of the southern section.

After all, there is much reason in the desire of the Kansas City motorists to travel over 700 miles to see a strip of scenic highway of about 200 miles. At almost every corner along the time-dimmed route there will be something to remind them of the stirring pioneer days. They will pass near the last residence of Kit Carson, past the sites of many old forts, in sight of the former home of Uncle Dick Wootton, and across the mountain along the course of his historic toll road.

SANTA FE TRAIL A FEW MILES OUT OF TRINIDAD

They will see what millions and enterprise has done toward the reclaiming of the desert and taking from the hills vast quantities of coal. They'll see "welcome" signs along the road for several miles before they reach Trinidad and they will gain a better understanding of the west than ever before when they drive in.

BUILDS A SAMPLE ROAD

Milwaukee, Wis., Aug. 22—A splendid piece of good roads has just been opened in Chippewa county, Wis. The townships of Stanley and Eagle Point employed a contractor, who with eight men and four teams, build a ¾-mile stretch of clay and gravel road in 22 days at an expense of $850. The work was undertaken mainly as a demonstration to other townships by the progressive officials of Stanley and Eagle Point, who are working for a county system of highways. The road consists of 4 inches of clay on the old bed slightly scraped, and 4 inches of good gravel, rolled with a 2-ton roller. The heaviest loads on smalyl-tired wagons make no impression.

PUTS THE RATES HIGH

Baraboo, Wis., Aug. 20—This city has passed an ordinance to the effect that it shall be unlawful for any person not a legal resident of the city of Baraboo, either by himself, his agent, servant or employe, by means of a motor car or other kindred motor vehicle, to transport or carry passengers for hire or reward unless he holds a license, the fee for which is $10 per day.

Asking for Higher Taxicab Rates

BOSTON, MASS., Aug. 23—According to a petition just filed with Police Commissioner O'Meara, the operating of taxicabs at a price of 30 cents for the first ¼ or ½ mile, with 10 cents for each ¼ mile thereafter, is not profitable. So three of the companies operating in Boston with 179 cabs have asked Commissioner O'Meara to allow them to increase their rates. The companies wish to get 50 cents for the first ½ mile and 10 cents for each ¼ mile thereafter, and to have the time limit of 6 minutes waiting for which 10 cents is charged reduced to 4 minutes. Another change asked for is that instead of the cabs carrying as many as may get in them for the one fare, that a charge of 20 cents for each person in excess of one may also be added to the bill for the whole journey. The companies in their petition claim that the 50-cent rate is more generally used than any other, and that all the operating companies in the country find that this is the lowest initial charge that may be made so that there is no loss. It also is claimed that in several cities, including New York, that unless trips are long ones the 30-cent rate causes a loss. Commissioner O'Meara gave out the petition of the companies to the press without making any comment other than that the rates now in force were those proposed and adopted at the suggestion of the taxicab companies. The companies claim that many of their trips in Boston are very short ones, because the city is not as large as some others, and the business section is within a small area comparatively, while the suburbs may be reached easily by other means of transportation, and therefore the runs are being made at a loss upon the investment. Commissioner O'Meara has taken the matter under advisement and he probably will render no decision until he has learned something about rates in other cities. Whether he will grant a hearing on the matter is not known. In the meantime the taxicab companies are studying the rates in other cities in order to make comparisons to present to O'Meara.

STARTS A ROAD REFORM

Wilmington, Del., Aug. 22—The Delaware Automobile Association has inaugurated a road-reform campaign in New Castle county, which probably will eventually extend to the entire state, having begun an effort to induce the levy court—the governing body of the county, which does all of the road building and has charge of all highways—to conduct a series of experiments in modern road construction along lines which are being followed by the government, with a view to determining which method is the best for this locality and adopting it as a standard. The court is now engaged in the expenditure of half a million dollars on new road work, and it is the hope of the Delaware Automobile Association to have a good standard adopted before all of this money is gone and for use in connection with future road improvement work in and about New Castle county.

The matter of adopting a standard was brought to the attention of the court at its last meeting by J. Darforth Bush, president of the association, and Joseph Bancroft, a member of the executive committee, who had with them a letter from an officer of the bureau of highways at Washington, criticizing specifications for a number of stretches of road which were then under consideration, but contracts for which have since been let in accordance with those specifications. While the court has taken no definite action along the line suggested by the association, it is believed that it will.

RACING AT NEWCASTLE

Newcastle, Ind., Aug. 18—Motor car races in connection with a county fair proved successful at the Henry county fair on the closing day, Saturday. Maxwell cars took seven firsts, four second and three third prizes, while the little De Tamble cars took two second, two third and one fourth prizes. The Inter-State scored one second and one third prize and the Overland one third and one fourth prize. The races were over a ½-mile dirt track, which was in none too good condition, owing to the horse races of the previous days.

On Santa Fe Trail Near Colorado-New Mexico Line

Germany's Big Business in Parts

BERLIN, Aug. 12—That the American parts makers are not able to meet the ever increasing demand for parts from the American motor car builders seems evident when one looks at the large quantity of parts for motor cars which are being annually exported to the United States by the European manufacturers.

Probably no other country in Europe is now doing as big a business in motor car parts with Uncle Sam as Germany. According to the recently published government statistics covering the first 6 months of the current year, the Germans sold $1,075,750 worth of cars and parts to the United States, while during the corresponding period of 1909 this total amounted to only $614,750. In these two records the value of the complete motor cars comes in for only $123,250 for the present year, thus far, and for $135,500 for 1909. From the American manufacturers of parts it seems that Germany buys nothing, which is not surprising after all.

During the first 6 months of 1910 the imports of American motor cars shows a decided increase over the business done in the similar period last year. The number of cars imported from the United States is not given, but their value is placed at $49,750, as compared with $13,250 in 1909. Whether these cars were actually imported to be sold or put in use in Germany is problematical. It is known that many cars are being shipped to Hamburg by American manufacturers who want to do business on the continent and who keep the cars in Hamburg simply as in a warehouse. Upon receipt of orders from other countries, like, for instance, Austria, Switzerland, Belgium, etc., the cars in warehouse or in reserve in Hamburg are reshipped.

All told, the showing made by the German motor industry thus far this year shows very large gains over the business done in previous years. All records are being broken and it looks like being a great banner year for Germany.

Taken as a whole, that is, including motor cars, parts, motor cycles, industrial vehicles, Germany exported $5,825,000 worth in 6 months this year. In 1909 during the same time the total shows only $3,075,000 worth, in 1908 it totaled $2,400,000 and in 1907 it amounted to $2,600,000. Thus in the comparatively short time of 4 years the Germans succeeded in more than doubling their motor car business with other countries.

The importation of foreign made motor cars, parts, motor cycles has somewhat increased since last year, the total value being $1,500,000 or $175,000 more than in 1909. In 1908, for 6 months, this record stood at $1,875,000, while in 1907 its value was $2,825,000.

The number of passenger cars or chassis or ordinary pleasure cars exported by the German motor car makers during the first half of 1910 was 1,433, having a total value of $3,201,250, or an average of $2,234 per car. In 1909, in the same space of time, only 736 cars were exported, of a total value of $1,716,250, or an average price of $2,331 per car.

The commercial or industrial motor vehicles exported numbered 106 of a total value of $308,250, or an average price of $2,907 each. In 1909 this post shows eighty-four vehicles exported of a value of $206,500, or $2,457 each.

Motor car parts exported thus far this year are recorded with a value of $1,120,750, while last year only $979,000 worth were exported. In this post are included 1,011 motor car motors, as compared with only 324 exported last year.

As already mentioned, the United States play an important part in the Germans' export business. Uncle Sam leads by a big margin among the buyers of motor car parts, being credited with $952,500 thus far this year. During the same time last year the United States imported only $479,250 worth of German parts. France is second on the list with $405,000 to its credit. Great Britain is third with a total of $300,500, followed by Belgium, which bought $79,750, as compared with $19,750 in 1909.

The best customer of Germany for its motor cars is Russia, which bought thus far this year $991,500 worth, while last year, during the same period, only $340,500 worth of cars went to the land of the czar. Austria occupied the second position, having bought $780,250 worth this year, as compared with $421,000 last year. Great Britain is next on the schedule with $436,500, or nearly $200,000 more than a year ago. France shows an increase of about $75,000, the total being $298,500. Argentina Republic comes next with $171,250 to its credit, while last year it had imported only $42,750 worth.

The commercial or industrial motor vehicle business is recorded separately. It is shown that Russia continues to be the best customer for this kind of German-made motor cars. In 6 months this year $160,750 worth were sold to the Russians, which is about $8,000 less than in 1909. Austria more than doubled its last year's purchases, which then amounted to $69,750 and this year stood at $147,750. Brazil comes next on the list with $97,750 worth, as compared with $42,750 last year.

More than 50 per cent of the commercial cars imported into Germany come from Switzerland. This year thus far $120,500 worth were received, while last year during the same lapse of time only $37,500 worth came. France is next on the list, with $10,500 worth to its credit, or about $20,000 less than in 1909.

While the Germans exported 1,433 of their motor cars they imported 675 from foreign countries, having a total value of $1,311,250 or $1,942 each. Last year in 6 months 616 cars were imported, having a value of $1,170,750, or $1,900 each. The thirty-seven industrial vehicles imported thus far this year are valued at $93,750, while the twenty-six brought into Germany last year were valued at $56,000, or about $2,154 each.

FRANCE MAKING A FUSS

Berlin, Aug. 12—The German motor car world is having a good deal of fun just now at the expense of its neighbors, the Frenchmen. It's all about the Prince Henry tour of 1911 and it is difficult to even make a guess how it will turn out.

To begin at the end of the story, the Frenchmen are angry because the next Prince Henry tour is to be a German-Anglo affair. Some of the French writers, men who stand high with the trade and sport of France, demand that something be done which will enable France to get in on the tour. In other words, they want the German club to extend the tour also to the French club and not exclusively to the British club.

The campaign which started in one or two little journals has been making headway and a few leading influential Paris papers have been belittling the tour and calling it simply a clever political move on the part of the emperor's brother. These Frenchmen claim that the next Prince Henry tour cannot be a serious motor tour because in the first place the fifty German club members and the fifty British members may drive any make of car they wish instead of being restricted of driving German cars, as far as the German clubmen are concerned and only British-made cars for the English members. Then the idea of having German and British officers or army men as observers seems another cause to make the tour look like a political affair.

All this is giving the local motorists much amusement. That it is most improbable that any change from the original plan will be made is quite certain. It will be a club tour for the German and British clubs and no other country will be invited to join. That the tour will not be as serious from a technical point of view is fully acknowledged. That it is to be a political affair is denied, but nevertheless it will have a good deal of seriousness of political influence, notwithstanding any contrary statements. Everybody agrees that the idea of Prince Henry is an excellent one and that it will have far-reaching effects upon the trade in both countries.

Whether the French club will promote a tour or race or any other kind of important event to take place about the same time the 1911 Prince Henry tour is to be held is not confirmed, although news about it has reached Berlin. That such a step on the part of the French club would be taken only to offset the importance of the German-British tour is evident, but it is less certain that it would meet with much success, ex-

cept from a purely French point of view. At any rate the high officials of the Kaiserlichen Automobile Club are not afraid and are in constant communication with those of the Royal Automobile Club of Great Britain in going over preliminary details. Although the plan of the tour as mapped out by the committee of the British club have not yet been finally accepted or adopted there is little doubt, but that in the main the British idea will be carried out.

AMERICANS IN PARiS

Paris, Aug. 15—An American store in the Paris motor row would have almost appeared a sacrilege a few years ago. At the present time, although American cars have not secured a great hold in the French capital, at any rate they are no strangers and in the provinces they are largely in use. Conspicuous among the motor establishments are the Pierce-Arrow European touring office, and the B. F. Goodrich company's Paris branch, both in the heart of the motoring districts, and occupying establishments where formerly French products were displayed and sold.

Pierce is not alone in representing the high-class American trade, for a quarter of a mile away, on the Boulevard Pereire is the Packard Motor Car Co.'s establishment now in charge of Mr. Goode. Peerless does not possess a separate establishment, but has a representative at the New York garage run by M. Bousquet. In the selling line Michell has the largest display, with an establishment on the Avenue MacMahon, a few yards from the Place de l'Etoile. Ford has a private office in the center of the city, with its garage and selling department just outside of the city limits at Neuilly.

The Goodrich, which for over 2 years has been alone as the representative of American tire manufacturers in Paris, and has succeeded in winning a most important position, has recently been joined by agents for the Diamond and the Morgan & Wright tires. In the accessory business there is little direct representation of Americans firms in Paris. Rushmore has its own establishment, but the majority of the American accessory dealers place their goods on the market through French houses.

SELLS TRACTOR IN RUSSIA

Chicago, Aug. 22—Word has just been received at the Chicago office of the International Harvester Co. of America that the first American-made gasoline tractor has been sold in Russia. The sale was made to Prince A. Lieven, who owns large estates in Mesothen, by the McCormick general agent at Riga, in southeastern Russia. The adoption of the American tractor methods of farming is of particular interest, owing to the fact that last year Russia, whose population use rye almost entirely for their own bread, jumped ahead of America in the production of its wheat crop.

Tours Help the German Industry

BERLIN, Aug. 11—Several German tradesmen were asked their opinion as to what they think is due principally the wonderful increase in Germany's foreign motor business. All were unanimous in giving first credit to the annual German tour, the Prince Henry, and as far as Russia and other northern countries' business is concerned, to the success of German cars in various sporting events held in Russia and in those other countries.

"Prince Henry and the other German sportsmen, especially Professor Herkomer, who were responsible for the Herkomer and Prince Henry tours, never can be thanked enough for what they have done for the German motor industry," said one big dealer. "These tours have done more than all the Bennett, Emperor and other cup road races and speed contests held in Germany. It is only since these annual tours have been started that the class of people which really makes it possible for motor car manufacturers to exist has started to buy cars. Until then the motor car was in every respect a luxury. People who then had cars were the wealthiest, the sportiest or the highest in the country. Just like in France, it was a case of having a big racing car to drive about at record speed whether one knew anything about the car or not. The man who had the money and could afford a 60 or 70 horsepower car simply bought one if he found out that his friend or some one else he knew had bought one.

"Since the tours have taken the place of the road races the demand for racing cars naturally has decreased and I doubt if today there is a single order during a whole season for a racing car except by professional drivers who make a living that way. This turn or change in public taste has been all for the good of the industry.

"When the first road race was promoted in Russia by several Paris newspaper men there was no great response from the French manufacturers. In Germany the manufacturers also were but little inclined to go to the big expense and send cars and men to race in a country where the motor car was as yet practically unknown and where the roads were mostly in poor condition. The object of the French promoters was, however, too well defined for our makers not to take advantage of the opportunity. Many did not then take an interest, but nevertheless it will be remembered that our great Mannheim concern, Benz, won the big race. From that time on the German manufacturers never have neglected an opportunity to show to the Russians what the German cars can do and thus far every event of importance has been won by German cars. Is it then surprising that our export business with Russia has increased so rapidly and to such great amount. The Frenchmen fully realize this and now regret their neglect of the Russian market. They do business, but they would have been the leaders if they had worked the field at a time it was yet entirely uncovered.

"Another reason of our success is in the fact that German cars are well made and durable. Until a few years ago we made rather heavy, clumsy-looking cars. But these cars still are being used and, like our bicycles, they have made a reputation for us and demonstrated that we make things which last a long time, which are solid, even if not chic."

EUROPEAN MODELS LATE

Brussels, Aug. 1—The announcement of the continental press that American manufacturers started delivery of 1911 cars, July 1, has caused a big furore among the European makers. European deliveries are much later than American. Speaking on this one dealer said: "With the exception of five cars not another of the twenty-seven makes which are sold this year have been delivered, due to the fact that it has not completed its 1910 deliveries before January 1. There are few motor car manufacturers in Europe who are able to deliver current year's model until late in the year. There are some who did not begin delivering 1910 models until July 1, and some that will not deliver them until October 1. The cause of this slowness is that many of the makers wait until the show before buying their necessary quota of material or placing their orders for parts. Each manufacturer completes a couple or more cars before the show, but only a few of the big houses go ahead and manufacture them before that time. The others wait to see how their new models will be received by the public, and they gauge the quantity by the impression made by their cars at the show. I know positively that

SHOWING UNCLE SAM

Philadelphia, Pa., Aug. 22—The first United States mail motor efficiency trial, to be held under the auspices of the Quaker City Motor Club, will take place during the week of August 29 to September 3. Each day two cars will start from a point selected by the postoffice authorities, the object being to reduce the time of delivering the early morning mail. The time en route is to be strictly noted and the car finishing delivery in the quickest time will be awarded a sterling silver trophy. So far, the following entries have been received:

Louis J. Bergdoll Motor Car Co., Bergdoll, Willie Haupt or H. C. Vaughan, August 29; Oxford Automobile Co., Brush Car, Charles Kemmerer, August 29; Philadelphia K. M. F. Co., Hudson car, Frank Yeager, August 30; Olds-Oakland Co., Oakland, James McGee, August 30; W. J. Sprankle, Overland, J. Greenwood, August 31; Harvey Ringler, Chalmers-Detroit, Harvey Ringler, August 31; H. C. K. Motor Car Co., Kilnekar, N. D. Morton, September 1; Longstreth Motor Car Co., Pullman, H. A. Bitner, September 1; Prescott Adamson, Reo, Irwin Yerger, September 2; Continental Motor Car Co., Parry, Harry L. McCullough, September 2; Penn Motor Car Co., Mitchell, Frank Bishop, September 3; Johnson Motor Car Co., Haynes, Al La Roche, September 3.

METHODS OF NUT LOCKING

CHICAGO, ILL.—Editor Motor Age—What are some of the different methods used at the present time to prevent nuts coming loose on motor cars?—Reader.

There are four leading methods which are used for the prevention of nuts loosening on a car. The first is putting a second nut or lock nut on. This is common practice, but the objection is that it requires a greater length of bolt to accommodate the second nut than is necessary. A scheme which is more popular at present is shown in Fig. 1, and is the use of the castellated nut N. This is usually a six-sided nut with vertical slots S in which the cotterpin C passing entirely through the bolt enters. The presence of the cotterpin makes the loosening of the nut impossible. With this method of locking, owing to there being but one hole through the bolt through which the cotterpin can pass, the nut has to be turned one-sixth of a revolution before the cotterpin can be inserted in the next slot. The illustration in question shows a double scheme used, namely, that of employing a split washer W beneath the nut N. This is the precaution taken on 1911 Stoddard-Dayton cars with the nuts holding the gearbox and motor arms to the frame members. This is a precaution rarely found in which the castellated nut, the cotterpin and the spring washer are combined. It is customary with many manufacturers to employ only the split washer with an ordinary nut, the pressure of the washer being such as to hold the nut rigidly in place at all times. Another method used by some manufacturers on spring shackle bolts is that of riveting the head of the bolt over the nut. The Franklin company does this on its spring shackle bolts.

HAS MOTOR CYCLE TROUBLE

Havana, Ark.—Editor Motor Age—Through the Readers' Clearing House will Motor Age tell me what is the matter with my twin-cylinder Thor motor cycle? The machine is a 1910 magneto model and has been run slightly over 300 miles. A few days ago I experienced a pleasant spill in a sand bed, and since then my motor has not been behaving exactly right. When first starting it will badly misfire, but after warming up fires steadily until the throttle is opened, then it will begin to miss again with frequent violent explosions. I have adjusted the air valve on the carbureter to all positions but to no avail. How close should the contact points of the breaker be when open, and what is the result if they are opened too wide?—J. E. Mitchell, Jr.

It seems that your trouble is most likely to be in the carbureter. The missing and explosions may be due to the fact that when you fell the gasoline supply pipe was bent so that the flow of fuel is inhibited, or it is possible that little dirt may have gotten into the carbureter, interfering with its functions. On the other hand, it also is possible that the adjustment of your ignition devices are not what they should be. The breaker points should separate about 1/64 to 1/32 of an inch. If the breaker points are on a magneto 1/64 of an inch is about the proper distance, while if used with a coil and batteries a little more space will perhaps be necessary. If they are open too wide the induction coil will not have sufficient time to become properly charged and the strength of the secondary current will be reduced and misfiring will be the result.

The Readers'

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

THE ELGIN ROUTE

Plainwell, Mich.—Editor Motor Age—Will Motor Age kindly publish a route from Chicago to Elgin?—C. F. Burroughs, M. D.

Leaving Chicago at Michigan avenue and Jackson boulevard, go west on Jackson boulevard, north on Ashland avenue to Washington boulevard, west on Washington to Garfield park to Austin avenue, north on Austin avenue to Lake street—the brick pavement—left on Lake street over brick pavement onto the Elgin road at Latrobe Steel Works. From this point follow the Chicago Motor Club signboards with arrows indicating the direction and "Elgin" on each signboard.

THE EVANSVILLE ROUTE

Evansville, Ind.—Editor Motor Age—Please advise me, through the Readers' Clearing House, the best route from Evansville, Ind., to Detroit, Mich., and return same way via Terre Haute, Indianapolis and Fort Wayne. Also advise distance.—Armand R. Emrich.

Motor Age suggests you go via Princeton, Vincennes, Bruceville, Carlisle, Paxton, Sullivan to Terre Haute. From this point to Indianapolis the route lies through Seeleyville, Stanton, Brazil, Reels, Manhattan, Mt. Meridian, Plainfield and Indianapolis. From Indianapolis to Fort Wayne, the towns passed through are Greenfield, Pendleton, Anderson, Summitville, Fairmont, Marion Huntington, to Fort Wayne. From this point on the route is by way of Hicksville, O.; Defiance, Napoleon, Wauseon, Ottokee, Lyons, Adrian, Mich.; Tecumseh, Clinton, Ypsilanti and Detroit. Distance approximately 590 miles. For detailed mileage and directions, Motor Age refers you to the Automobile Blue Book.

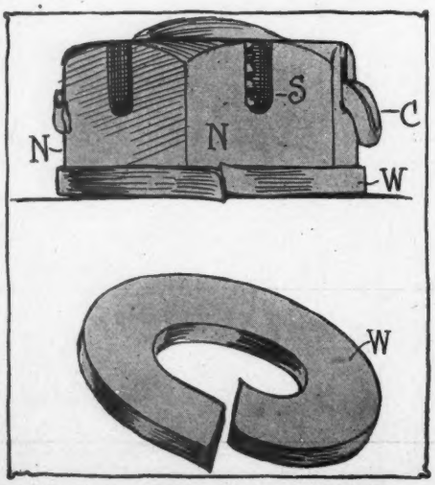


FIG. 1—METHODS OF LOCKNUTTING

SPEEDOMETER ATTACHMENT

Bellaire, O.—Editor Motor Age—Through the Readers' Clearing House, will Motor Age advise me if there is any speedometer or device to show if your car is running over, say 20 or 30 miles per hour?—H. B. Wilkinson.

Motor Age does not know the nature of the device you have in mind. The ordinary speedometer will show when you are traveling over 20 or 30 miles per hour, and the maximum hand on these speedometers will register the highest speed attainable. If you think your speedometer is not sufficient you can insert an electric connection in the speedometer dial so that when the needle registers 20 miles per hour it contacts with the connection and completes an electric circuit which can be used to set a bell ringing or to light a small electric lamp.

WANTS POWER PUMPS

Crestline, O.—Editor Motor Age—I should like to see Motor Age get after the manufacturers of popular-priced motor cars to equip cars with motor-driven air-pumps for tire inflation. How much longer does the owner have to depend on the hand pump? This, in my opinion, is an improvement that should have been furnished years ago. There is no doubt but that the right kind of effort on the part of the trade papers could bring this much-needed improvement about.—Paul F. Frank.

Air pumps are being fitted on some of the highest-priced cars, but not on the popular-priced machines. A good air pump costs money, and a poor one never gives satisfaction. The cylinders and pistons on a good air pump have to be made as carefully as the cylinders and pistons on the car. Where air pumps are poorly made, they lose compression and became most exasperating and useless. A popular-priced car cannot afford to put on one of these power pumps at the present time. Several concerns have marketed power

Clearing House

EDITOR'S NOTE—To the Readers of the Clearing House columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated

pumps for tires, but they have been so hard to install, that it has been impossible to sell them. A good power pump must be designed as a part of the motor, and must be made as carefully as it.

REMOVES BROKEN SPARK PLUG

Grand Rapids, Mich.—Editor Motor Age—I have had a little trouble with a broken spark plug which I would like to relate. One of the plugs in a two-cylinder opposed engine was broken at the bottom and when I attempted to remove it, it broke off flush with the top of the cylinder and half of the porcelain fell into the cylinder in little pieces. The threaded part of the plug was firmly lodged, so I cut straight down from the top edge to the bottom of the spark plug hole with a small cold chisel. Then I could bend what was left of the plug and pry it out, but I still had porcelain and iron shavings in the bottom of the combustion chambers. After getting this in one corner with a stick, I removed it by sticking in a long bolt with a ball of cup grease on the end. The porcelain and iron shavings stuck to it and were removed easily and quickly.—Carol Seven.

REACHING PLAINFIELD ROAD

Chicago—Editor Motor Age—Will Motor Age, through the Readers' Clearing House, advise the best road to Riverside from Washington boulevard and Austin avenue? Austin avenue is very bad, and there is always something wrong at the railroad crossing at the south end. How do motorists reach the Plainfield road at Riverside?—C. H. Bruce.

Go west on Washington boulevard to Maple boulevard, thence left to Madison street, west on Madison to Desplaines avenue and south on Desplaines to the Riverside road. This road bears west through Riverside. Immediately across the railroad tracks in Riverside turn right and avoiding right forks cross the bridge leading to Lyons. Continue straight ahead on this road until the Plainfield road is reached.

REPAIRING GASOLINE LEAD

Louisville, Ky.—Editor Motor Age—In a recent tour I had an experience with a leak in the gasoline line between the tank and the carbureter which may be of interest to readers. The leak occurred near the cross member of the frame and was a pinhole which may have been caused by the gasoline feed pipe vibrating against the frame. My first repair was to wrap it well with tape, the tape wrapping extending 2 inches at either side of the leak. Owing to the proximity of the muffler to the taping, this did not prove effective and the leak was as bad as ever in ½ hour. As a second and permanent repair I shut off the gasoline at the tank and placed some chewing gum over the leak. This done, the pipe was carefully and tightly wrapped with tape for a length of 4 inches. To complete the job, as illustrated in Fig. 2, three lengths of fine copper wire, W, W1 and W2, were wound tightly around the taping to prevent it working loose on the smooth copper pipe. This repair was effective for upward of 1,000 miles until the pipe was permanently repaired.

STANDARD GEAR RATIOS

San Francisco, Cal.—Editor Motor Age—Through the Readers' Clearing House, will Motor Age publish the average high, intermediate, low, and reverse ratios of gears in the average car?—J. W. Capek.

The average gear ratios on several cars is: Direct drive—3 to 1, 3½ to 1, and a few 2½ to 1. Intermediate ratio is 8 to 1. Low-gear ratio is 14 to 1. Reverse, 16 to 1.

FOUR CYLINDERS OPPOSED

San Antonio, Tex.—Editor Motor Age—Will Motor Age or some of its readers give me their opinion of a four-cylinder four-cycle engine in which a pair of cylinders are set on opposite sides of the crankcase. This would be similar to a double-opposed engine except there would be two cylinders on a side instead of one, and there would be two connecting rods working from one crankpin. It seems to me that this arrangement would make a much lighter engine since it reduces the length of the crankshaft and crankcase. The firing and balance would be the same as the common arrangement of cylinders. It would be of especial advantage for aeroplanes. Are my assumptions correct?—Engine.

A motor of this type has been on the market for several seasons, in fact, two or three concerns have used such types of motors. On the Holsman motor buggy a four-cylinder air-cooled design of this nature was used for a couple of seasons. Water-cooled motors of this type are now in use, and recently the Twombly motor built on this design has been marketed. This design gives a very compact power plant and the motor is not expensive to manufacture.

WINDSHIELD ON STEERING PILLAR

Crescent City, Ill.—Editor Motor Age—Kindly advise me, if possible, through the columns of the Readers' Clearing House, where I can obtain a windshield which attaches to the steering post, is oblong in shape, or round, I do not know which, and about 20 inches in diameter. I have seen such a shield advertised, but have been unable to locate the manufacturers or dealers.—W. R. Nightingale.

The only windshield of this type that has been used was one fitted to a special Franklin car shown at the show circuit last winter. There is no reason why a shield of this nature cannot be used, as it would be similar to the stone screens used on racing cars. These are secured to the steering column by a bracket and are hinged so that they may be laid horizontally when necessary.

THE CUT-OUT ADVANTAGES

Grinnell, Ia.—Editor Motor Age—Will Motor Age kindly answer the following questions?

1—What is the advantage of a cut-out?

2—Does it consume much more gasoline than otherwise?

3—Would Motor Age advise installing one in an E-M-F, 1910, model 30, or not?—Subscriber.

1—A muffler cut-out gives a more free passage for the exhaust gases, and so reduces whatever back pressure there might be of the exhaust gases into the combustion chamber.

2—There is no difference in the consumption of gasoline, but there is a difference in the power of the motor.

3—It would be beneficial to install one on your E-M-F 30. The advantages of a cut-out are apparent when climbing grades. With motors on the testing block, the cut-out advantage is shown by the increase in the number of crankshaft revolutions per minute when the cut-out is opened.

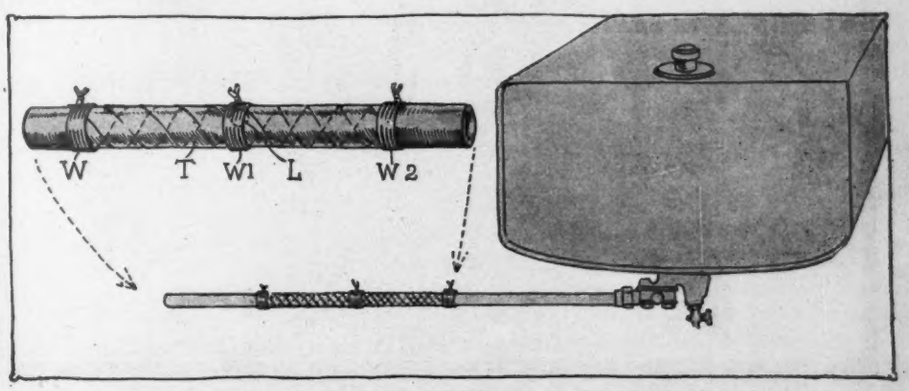


FIG. 2—REPAIRING A GASOLINE LINE TO THE CARBURETER

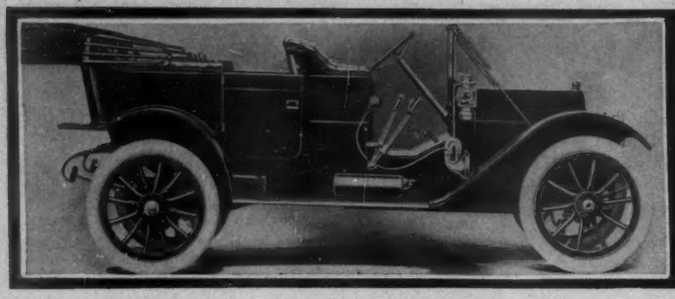


FIG. 1—CHALMERS 40 TOURING CAR

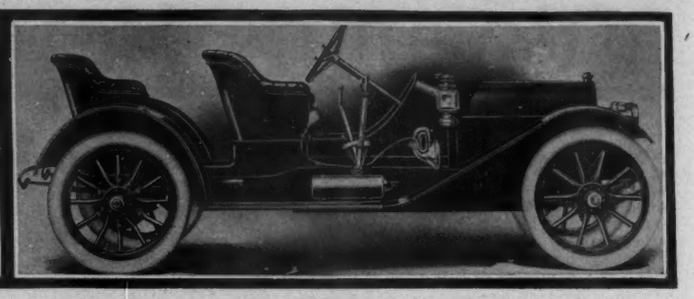


FIG. 2—CHALMERS 40 ROADSTER MODEL

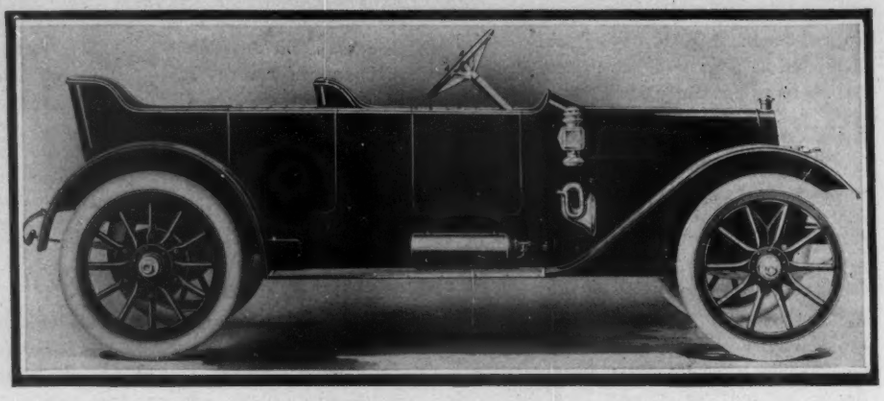


FIG. 3—CHALMERS 40 NEW TORPEDO MODEL FOR 1911

Chalmers Company With Two Models

BY listing two models for the 1911 market the Chalmers Motor Co. shows a continuation of its present policy. For 1911 the two models are the 30 and the 40. The general design of both is the same as this year, but there have been changes made in the oiling systems, the 40 ignition system has been entirely changed, longer frames are used without lengthening the wheelbases, and for the 40 a torpedo type of body has been substituted for the toy tonneau of this year.

It is rarely the case when a concern manufacturing two cars like the Chalmers company builds two models which are entirely different in design. Ordinarily concerns marketing two models make the smaller one a duplicate of the larger excepting for the size of the parts used, but in the Chalmers case the 30 is an entirely different design from the 40. To cite these differences the 40, as Fig. 4 illustrates, uses a motor with L-type of cylinders cast in pairs, whereas the 30 employs a different type of motor, Fig. 8, in which the four cylinders are cast as one unit and in which the intake valves are located in the cylinder heads and operated by rocker arms, with the exhaust valves positioned in offset chambers on the left side. The differences in design between the Chalmers 30 and Chalmers 40 do not end here. On the 40 a selective gearbox is a unit by itself, located amidship, whereas in the 30 the gearbox forms a unit with the motor. Still a further difference between the two consists in that the 40 uses a cone clutch, whereas the 30 employs a multiple-disk design. There is a marked similarity in the lubricating system on both, in that the circulating system with plunger pump for forcing the oil is employed. On the 40 a Bosch dual ignition scheme is used, whereas the 30 uses a magneto with battery. In the running gear both employ double drop frames, the object of the double drop being the lowering of the tonneau door and making the side step unnecessary.

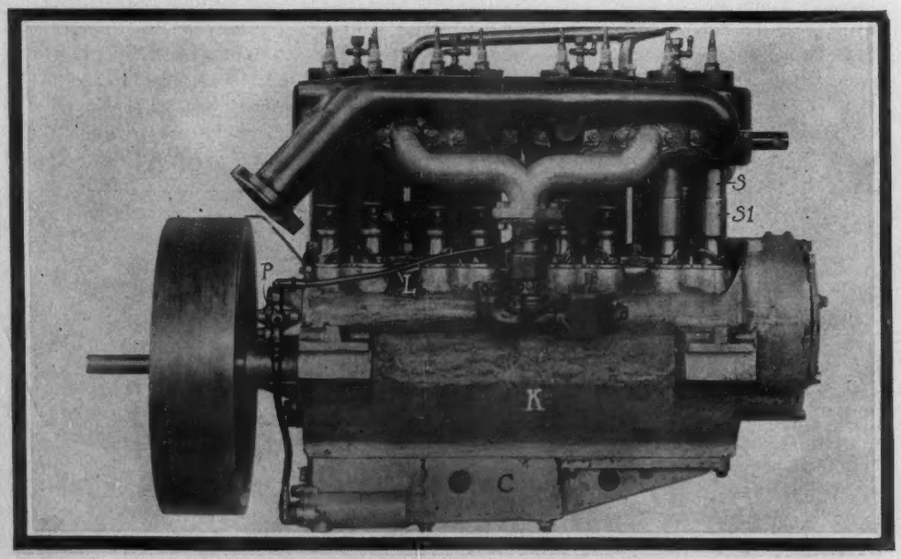


FIG. 4—VALVE SPRINGS ARE ENCLOSED ON CHALMERS 40 MODELS

Perhaps nothing in conjunction with 1911 Chalmers cars is of greater importance than the fact that the company is manufacturing practically all of its motors and gearsets. Heretofore these have been manufactured at outside factories, but under the supervision of Chalmers engineers. During the present year, a large factory building for the various machining operations on these models has been installed, so that the motors with the exception of the castings are the complete products of the company, being manufactured in their entirety in the company's factory and by its own workmen. This factory has been fitted up with the latest machines used in manufacture, a special heat treating building has been added for treating the steels used, and every necessity and convenience in motor car manufacture added.

Before passing to a consideration of the chassis, the line of Chalmers bodies for the coming season might be reviewed. There are three 40 types, the touring car, the roadster, and the torpedo, the torpedo taking the place of the toy tonneau marketed this year. It is shown in Fig. 3 and is characterized by a straight-line effect from front to rear, with all locks, handles and controlling levers placed on the inside of the body, giving a clear-cut side appearance excepting for the dash lamp, horn, and gas tank. Some slight change has been made in the body appearance of these cars, due to 3 inches being added to the length of the frame, which, however, has not altered the wheelbase. In all 40's as well as 30's the seats have been low-

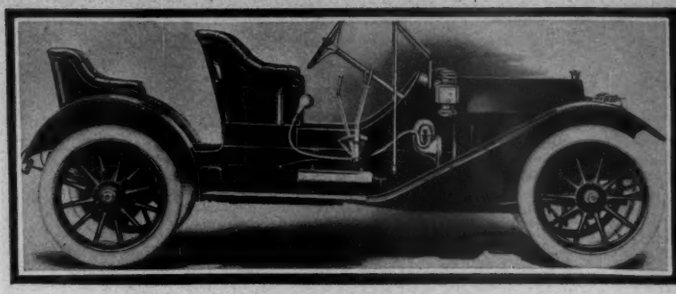


FIG. 5—THE CHALMERS 30 ROADSTER

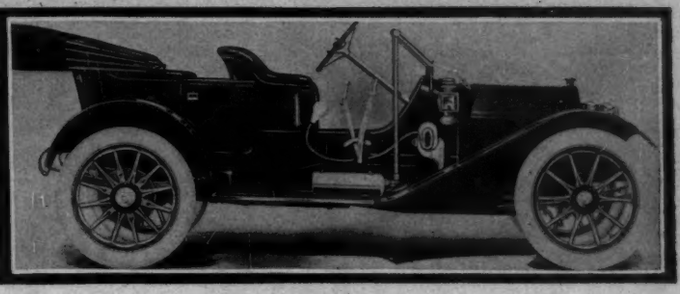


FIG. 6—CHALMERS 30 TOY-TONNEAU

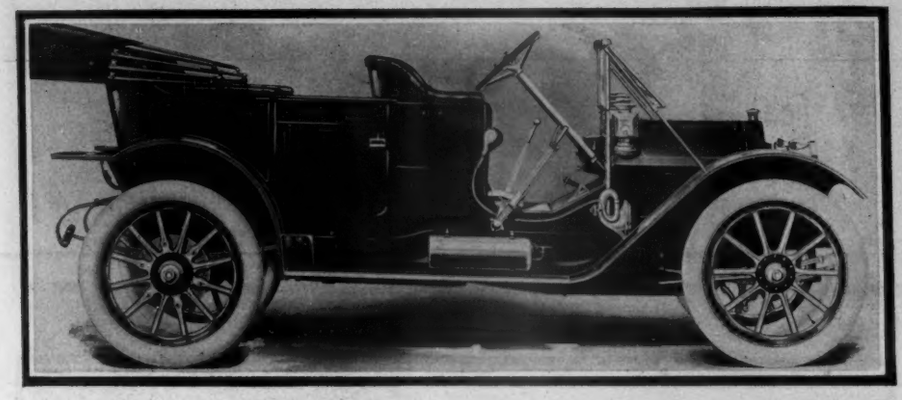


FIG. 7—THE 1911 CHALMERS TOURING CAR

Continues Its Old Policy in 1911

ered, tonneau doors are made wider, and other details cared for, such as heavier door locks and handles, as well as bonnet handles.

The Chalmers 30 is built in a number of body types, such as touring car, roadster, toy tonneau, limousine, landaulet and coupe. By adding 2½ inches to the frame length more body room is obtained, which is particularly conspicuous in the coupe. For 1911 this is a three rather than a two-passenger car. The third seat faces the rear and is located to the left of the steering wheel. The touring car is more along the straight-line type than heretofore and many of the body alterations incorporated in the 40 are also conspicuous in the 30 models. On both types the fender lines have been changed. On the roadster types the rear fenders are semi-circles, whereas at present they have flat tops. On the touring cars this type of fender is used on the torpedo and toy tonneau, whereas on the standard touring bodies the rear fender has a short horizontal extension to the rear. The forward fenders are continued over the wheels to a greater degree than this year with the object of preventing splashing of mud on the front of the car.

A change in the angle of the steering post gives more room between the front seat and steering wheel. A noted improvement in appearance is accomplished by fastening the irons which support the running boards on the inside of the side members of the frame instead of on the outside. The results obtained appear in the car illustrations. The running boards are of pressed steel with brass moldings.

The two types of Chalmers motors appear in Figs. 4 and 8. One conspicuous improvement in the 40 is that the valve springs are completely closed. There is a separate casing for each spring consisting of a sleeve S and one of larger diameter S1. These sleeves telescope with each other. By sliding the sleeve S1 upwards, the washer supporting the lower end of the valve spring is exposed and the pin holding the washer may be removed, permitting of taking the valve out.

A change is also shown in this motor in conjunction with lubrication, which is briefly as follows: The crankcase K is, to all intents and purposes, a one-piece aluminum casting, but there is a base compartment C of triangular shape which forms an oil reservoir or well. From this reservoir the plunger pump P elevates the oil and delivers it through the lead L to the motor parts. This oil goes by way of a sight feed on the dash. In this illustration is also shown a Stromberg carbureter which is stock on this model for the coming season, whereas the Mayer shown in Fig. 8 is stock on model 30.

A structural difference between models 30 and 40 which does not appear in these illustrations is that on the 40 plain bearings are used for the crankshaft, three of this type supporting it. On model 30 the crankshaft is carried on two races of annular ball bearings. This difference in construction causes, however, no difference in the lubricating system in that on both the oil from the plunger pump flows into the forward crankcase pocket and then supplies the splash by overflowing into the three remaining pockets.

The Chalmers 30 motor is perhaps alone in its line of design. It was one of the earliest monobloc motors placed on the American market and has practically continued unchanged since. While it does not incorporate either the intake or exhaust manifolds with the cylinder casting, nevertheless the intake is semi-incorporated in that it is formed as a unit with a rectangular plate on the side of

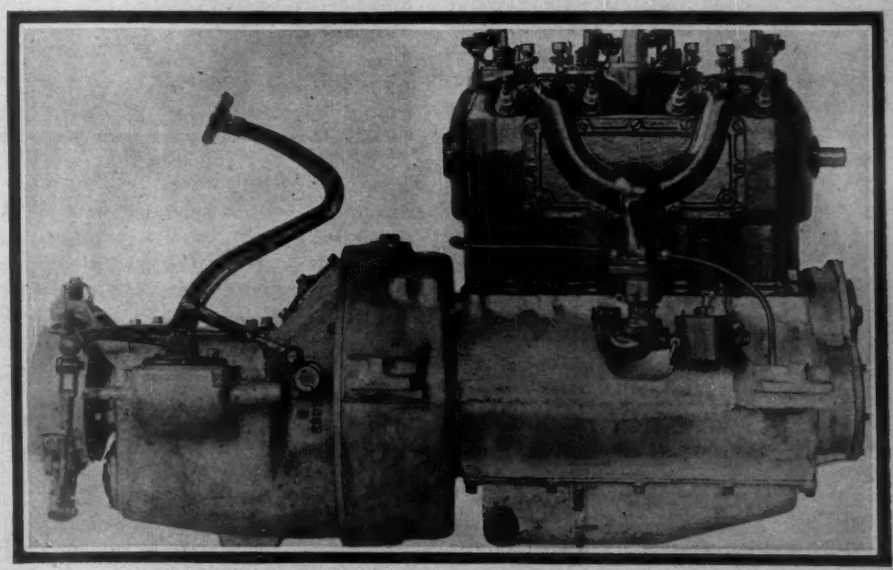


FIG. 8—UNIT MOTOR AND GEARBOX ON CHALMERS 30

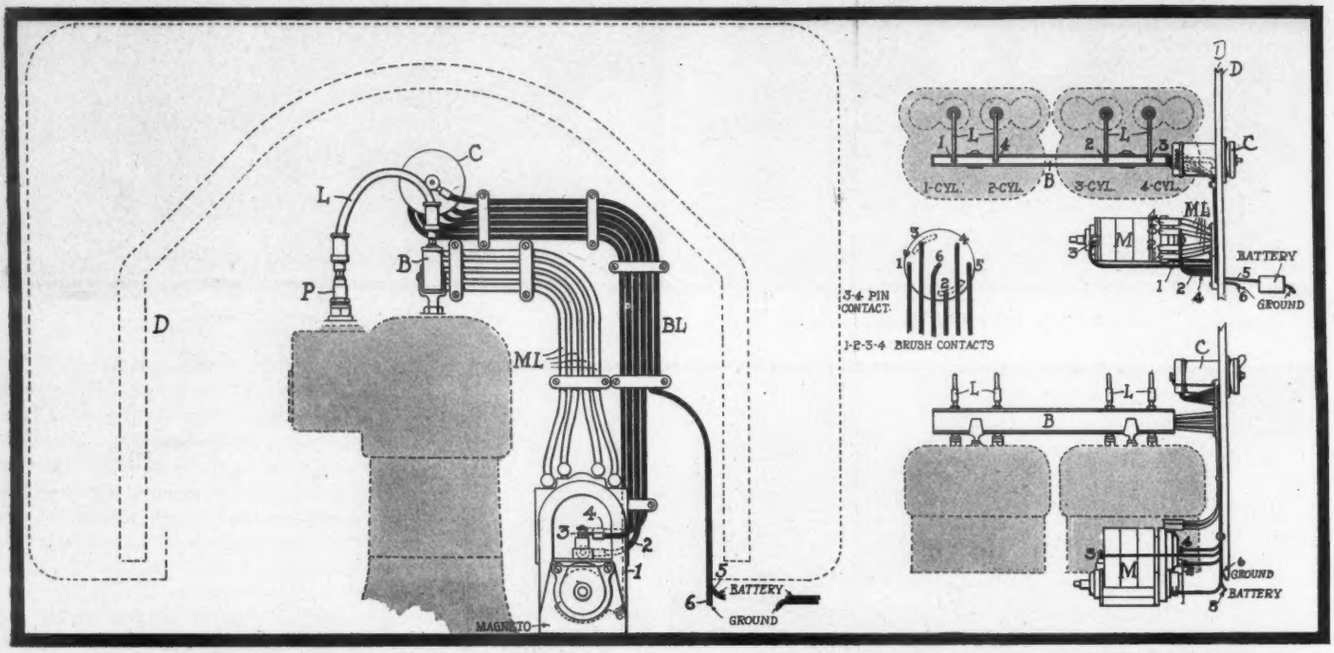


FIG. 9—IGNITION WIRING ON CHALMERS 40 CARS

FIG. 10—DIAGRAM OF CHALMERS 40 WIRING SYSTEM

the castings which forms the outer half of the manifold, the inner half being the monobloc casting. The exhaust manifold illustrated in Fig. 14 is a separate member of the same design as used in motors with cylinders cast in pars.

The wiring system on the 40 is illustrated in Figs. 9, 10 and 11, and constitutes perhaps one of the leading improvements in this motor. As Fig. 11 shows, the Bosch magneto is located at the left rear so that the magneto leads ML as well as the other leads to the coil C are as short as possible. A commendable feature is the bar B carried over the cylinder heads and inclosing the four leads to the plugs. From this bar the connections to the plugs are through the loops L. These loops have socket endings, so that it is but necessary to push them down on the pin top of the spark plug or the pin top on the terminal of the bar B. In this illustration the non-vibrating step-up Bosch coil C is shown. The purpose of this coil is to raise the voltage of the battery current used for starting purposes. The Bosch self-starting device is incorporated with this coil, as is the switch for using either the battery or the magneto. In Fig. 9 a general diagrammatic scheme of the wiring is shown, with the battery leads shown in black. These leads are numbered from 1 to 6. Leads from 1 to 4 connect direct from the coil to the magneto. It is understood that in the Bosch dual system a different magneto breaker box is employed and that the distributor in the magneto as well the magneto leads ML are used for delivering the current to the one set of plugs. This system is simple as compared with that employed this year, in which a four-unit dash coil is employed.

The ignition system on model 30 has not been altered in principle, although

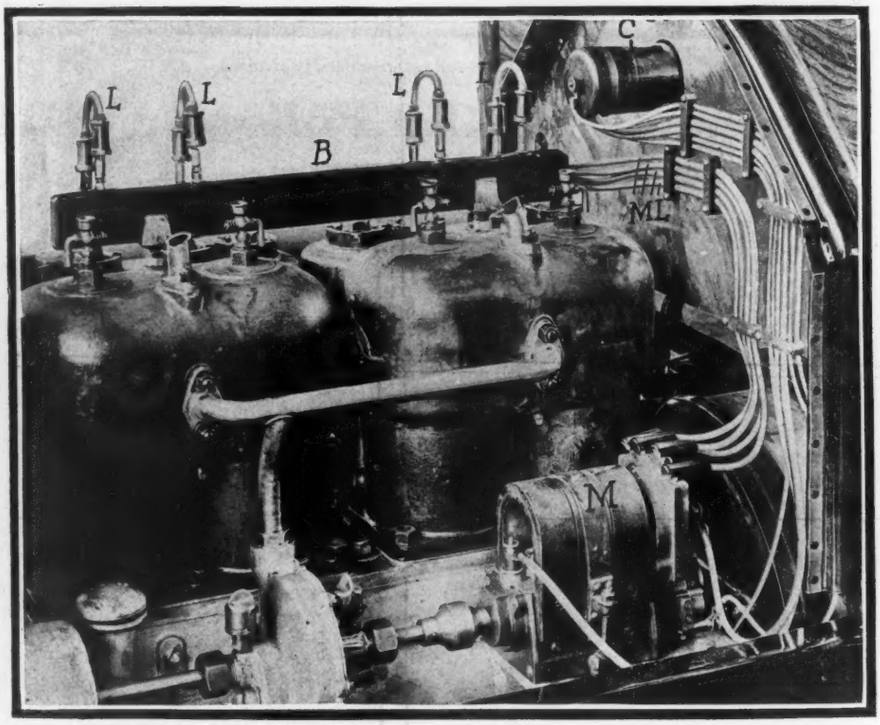


FIG. 11—BOSCH DUAL IGNITION SYSTEM USED ON CHALMERS 40

simplified to a considerable extent. As shown in Fig. 14 the Bosch magneto is located low down on the exhaust side and the four magneto leads ML are carried through a vertical tube T1, which keeps them away from the exhaust manifold. The leads emerge from this tube to the four magneto plugs MP. This constitutes one system. The supplementary system is a battery with a primary timer P in the circuit, with the low-tension winding of the dash coil C1. The primary wires from the coil to the timer are incased in a rubber tube T2, as shown to advantage in Fig. 12. The high-tension leads BL from the coil are carried over the cylinder heads in a fiber tube T and emerge from this to a special set of plugs BP. There are thus two sets of plugs used on the model 30 as compared with one set with model 40. The timer is placed low down so that the wiring is as restricted as possible, so that the possibility of access to the exhaust valve springs is at a maximum. Fi. 14 shows the dash of the car in which the insulations S for the high-tension leads to the coil are brought through the dash horizontally instead of being carred out from the bottom of the coil, as is frequently done. Beneath these

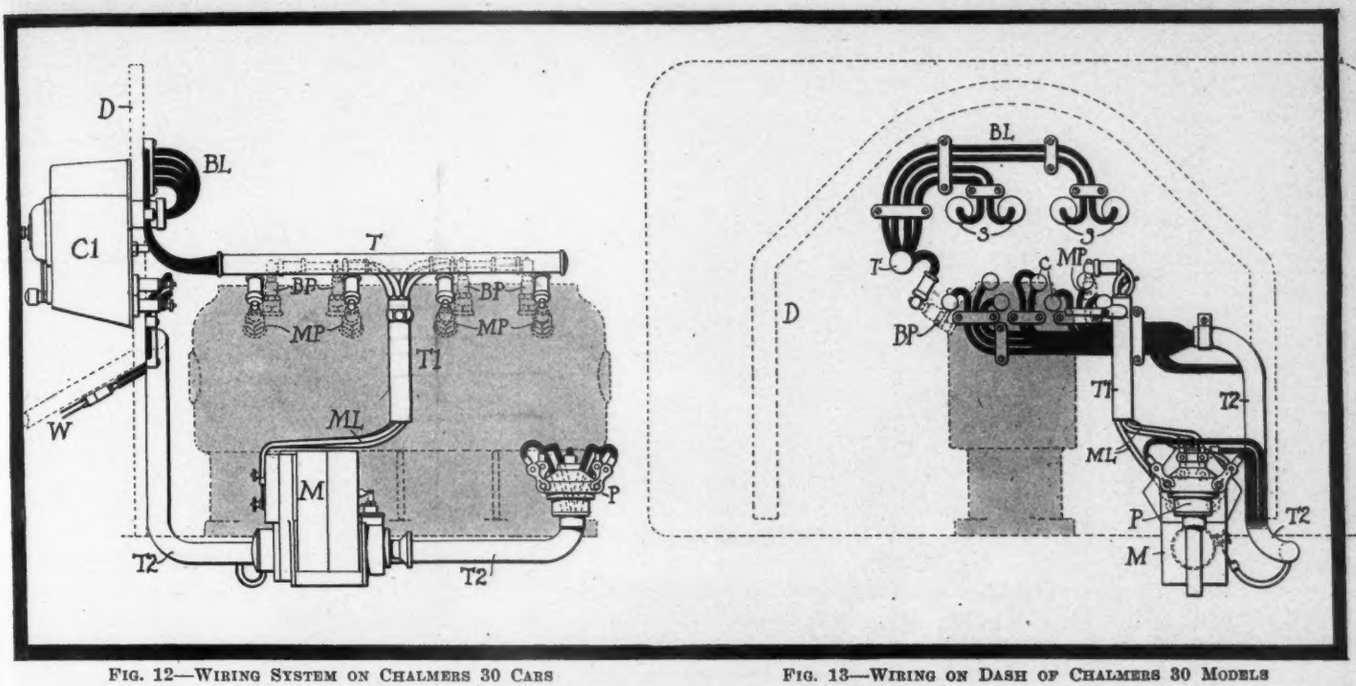


FIG. 12—WIRING SYSTEM ON CHALMERS 30 CARS

FIG. 13—WIRING ON DASH OF CHALMERS 30 MODELS

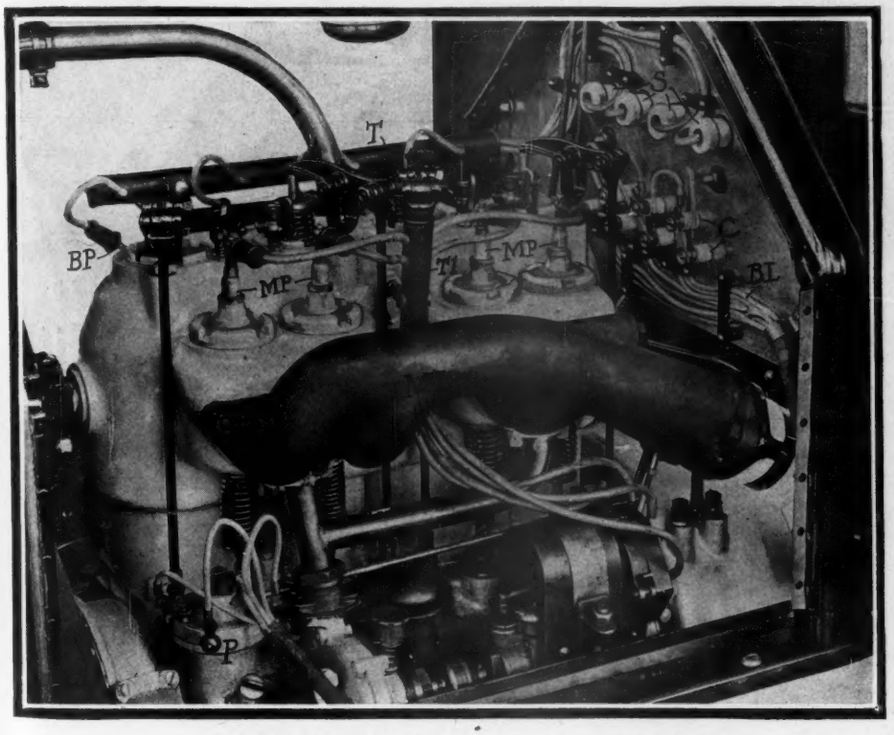


FIG. 14—CHALMERS 30 USES TWO SETS OF SPARK PLUGS

insulations are others C for the primary wiring. Bringing these primary and secondary coil wires through the dash places them under the bonnet, where they are well protected from water and leaves the coil C1, Fig. 12, a clean-cut member on the dash.

On the 30 the batteries are located in a weather-proof box under the tonneau floor and the space on the running board heretofore occupied by the battery is now used for the tool box. This change also applies to the model 40.

The cooling system on both models is a conventional forced circulation type, with centrifugal pump employed in each case. Both models are fitted with fans mounted in the rear of the radiator.

In a brief review of the transmission system on these cars perhaps the most important thing is made in the 30, which has now two universal joints in the propellershaft instead of one. During the present season this model has a torsion tube which incloses the propellershaft throughout its length. For next year this tube is dropped and the conventional propellershaft with universal joint at the forward end and another joint at the rear end substituted. Eliminating the torsion tube of the present season has called for a torque or torsion rod paralleling the propellershaft. This is a pressed steel construction rigidly secured to the differential and carried in a spring support at its forward end. The universal joints employed are of Spicer design. This change in the transmission system establishes one more point of similarity in the two models in that the 40 since its inception has used the double-jointed propellershaft.

Both cars are fitted with selective gearsets, which it is expected will be quieter because of all gear cutting and hardening of these sets being done in the factory. An improvement in the 30 is that the rear axle housing is a one-piece pressed steel design.

In the running gear of both cars the frame construction employed this season is continued, and a glance at any of the car illustrations will show how the side members are dropped at the end of the front seat, the drop continuing to the rear of the tonneau door, where side members are raised for their attachment to the three-quarter elliptic rear springs. The brakes on the 30 are the same as the present except that the band brake at the rear of the gearbox has been stiffened to eliminate rattling. By enlarging the transmission brake cam, and also by operating the hub brakes from the rear wheels by a wedge and two shoes which are held from rattling by stops and springs a great improvement in the 40 has been accomplished. The control on the 30 has been altered in that the foot excelerator has a back and forward movement instead of one from right to left as used this year.

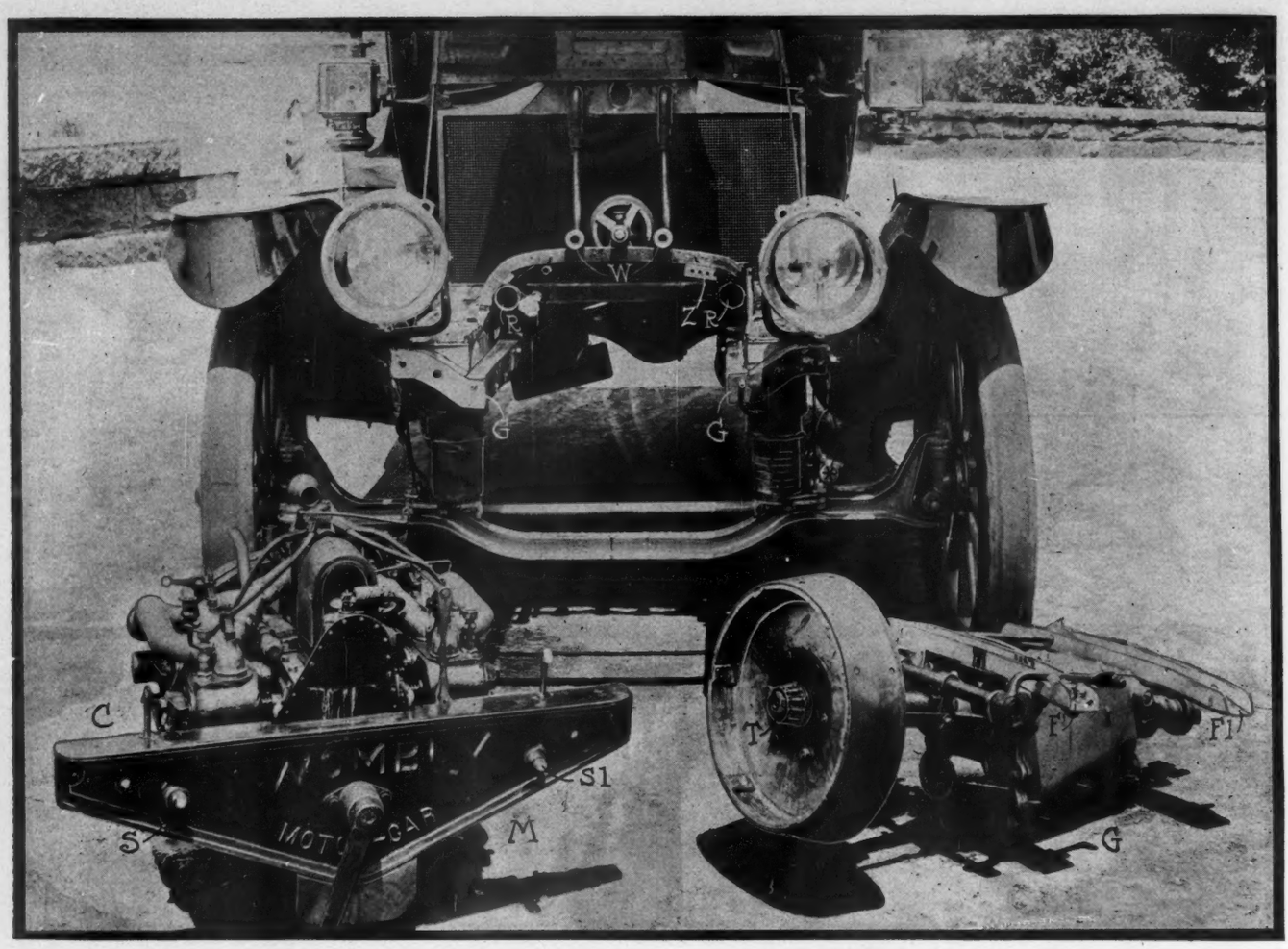


FIG. 1—FRONT END OF TWOMBLY MOTOR CAR WITH POWER PLANT AND UNIT CLUTCH AND GEARSET REMOVED

The New Twombly Motor Car With

SINCE the inception of the taxicab it has been the utopian dream that a car suited for this work should have a demountable motor and gearbox, whether these were formed as a unit or not. The reason is that should any part of a motor require repairing it could be slipped out of position and another power unit installed inside 5 minutes. This also would apply to the gearbox. With a power plant of this nature small operating companies could have a few extra motors so there would be no holding up the car for minor defects. A car answering these qualifications has been brought out in New York and is known as the Twombly, the Twombly Motors Co. being the manufacturer. In a recent demonstration of the demountability of this car, the motor, which weighs 206 pounds, and the gearbox were removed from the chassis and replaced again in 3 minutes 3 seconds. The motor was running immediately before the change was made and was started as soon as put back into place. Two men did the work, using nothing but a socket wrench. This quick demountability is made possible by guides G, Fig. 1, within the side members of the frame, and along which guides the motor and gearbox are slid into position. As the radiator is located in rear of the motor, Renault fashion, the water connections are automatically made, but Motor Age does not know what provisions are fitted, if any, to prevent escape of water from the radiator and cylinder-jackets when the motor is removed from the car.

Fig. 1 illustrates the general scheme of demountability, showing the complete motor group M at the left with the magneto and carbureter in place and the gearbox group G at the right incorporating with it the leather-faced cone clutch. Fig. 6 shows two workmen in the operation of withdrawing the motor horizontally to the front, and with it removed the gearbox is similarly taken out of the car. The front cross-member C, Fig. 1, of the motor serves as a cross-member of the frame and when the motor is slipped into position the studs S and S1 fasten it in place, these being the only means for securing the motor in position. Before the motor is put in the gearbox G is fitted in place through its two supporting members F and F1. These members slide on the guides of the frame and when back into place as shown in Fig. 5 a pin P enters an eyehole in the bracket

FIG. 2—TWOMBLY LIMOUSINE

FIG. 3—TWOMBLY LANDAULET

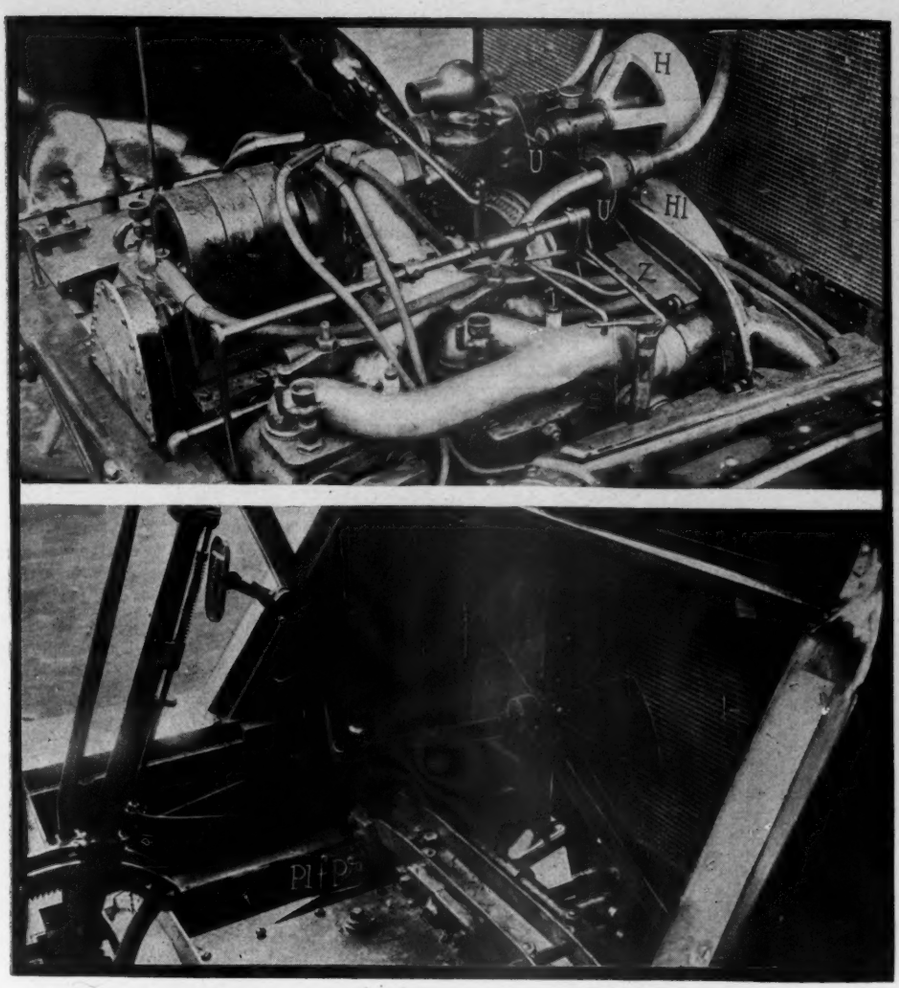


FIG. 4—ARRAGEMENT OF FEATURES OF TWOMBLY MOTORS
FIG. 5—CONTROL MECHANISM OF TWOMBLY CARS

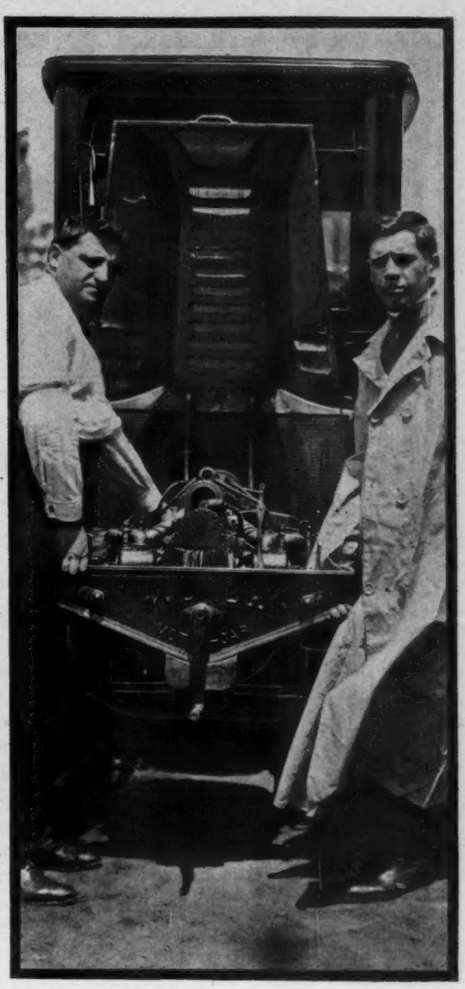


FIG. 6—REMOVING THE MOTOR

Rapid-Demountable Chassis Parts

P1 making it impossible for the gearbox to be pushed further to the rear. The centering or aligning of the gearbox with the motor is made possible by the Timken roller bearings T, Fig. 1, which carries the leather-faced cone clutch as well. In Fig. 1 the two water connections W from the radiator to the motor are shown, as are the muffler pipes W1. There are several features in conjunction with this demountable power plant which do not appear in the illustration, one being the method of connecting the ignition wires of the Bosch dual system. The Bosch coil is carried on the dash and the four leads undoubtedly have plug connections such as shown at Z.

The motor rated at 40 horsepower has four cylinders, 5 by 5-inch bore and stroke. These cylinders are placed horizontally and mounted transversely on the car so that the crankshaft is placed lengthwise of the chassis as in a four-cylinder motor. The two cylinders on the right are in alignment with the two cylinders on the left so that the crankshaft has but two throws the same as used in a two-cylinder opposed motor. This cylinder arrangement allows of using two built-up pistons for the four cylinders. The crankshaft has two throws fitted with annular ball bearings, which bearings are arranged between guides in each piston, the guides being separated a distance equal to the outside diameter of the outer edges of the bearings, plus a working clearance. The guides are located in the vertical plane at right angles to the direction of reciprocation of the pistons, and when the crankshaft rotates, the ball bearings on the throws press against the guides, causing reciprocating motions of the pistons. Two camshafts are placed above the crankshaft, they being parallel to each other, and at right angles to the valves, so that they operate in precisely the same way as in a conventional type of four-cylinder motor. The valves, of which there are two for each cylinder—intake and exhaust—come to the top, and are accessible through covers, and are held in place by yokes. The magneto is located on the top of the crankcase at the front, and the carbureter is at the rear of it. Motion is imparted to the fan, which is located behind the radiator by means of a truncated conical friction member H engaging the periphery of the flywheel.

Fig 5 shows the control scheme of the car with the steering column on the left side and the emergency brake lever and change speed lever located in the center, so as to be controlled by the right hand.

FIG. 7—TWOMBLY TAXICAB

FIG. 8—REMOVABLE FORE DOOR

ADVANTAGES OF VARIOUS VALVE TYPES

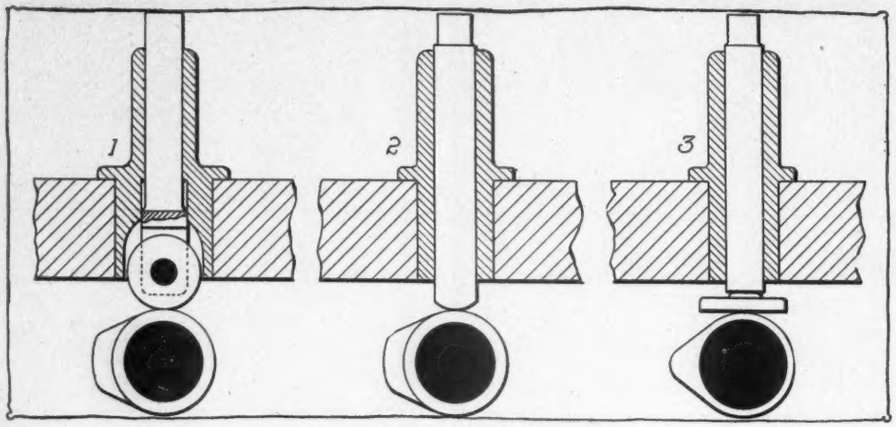


FIG. 1—COMMON FORM OF CAM FOLLOWERS

EDITOR'S Note — The following paper on "Slide, Rotary and Piston Valves versus Poppet Valves for Gas Engine Service," is by Eugene P. Batzell, and was read at the recen meeting of the Society of Automobile Engineers in Detroit.

WE are at present living in that stage where increased attention is being paid to silent running gasoline motors for motor car use. A well-known source of noise in ordinary poppet-valve motors is their valve mechanism. Though it is possible to build silent poppet-valve motors by using good workmanship and making accurate adjustments, this can be afforded only in the expensive cars. Moreover, as the working parts are subjected to wear, and as the adjustments get out of order, the silence of a poppet-valve motor will be only temporary. In cheaper cars, the class which is so popular nowadays, the simplest means for making the motor more silent in its valve motion consists in concealing by covers all places where noise is generated.

The imperfection of poppet valves indicated is probably a leading reason for the revival of the growing interest in silent valve systems. Many constructions of such valves are appearing. But only a few of these have been built; and still fewer have been subjected to tests.

Flat and Roller Lifters

The rate and duration of opening of a poppet valve depend on the shape and size of the cam, and the type and size of the cam-follower. The most extensively used forms of cam-followers are the roller, the V-shaped, and the flat or mushroom valve lifter foot, Fig. 1. The valve-opening diagrams with the roller and the V-shaped valve lifters depend upon the radii of the contact surfaces. Identical diagrams are obtained regardless of whether the cam-base circle or the follower-roller or spindle are made of a certain size, providing the relation between them remains the same. Therefore, only the flat and roller lifters will be considered.

As to the cams themselves, they can be made in very different shapes. In Fig. 2 are represented three, which will be discussed here, 1 and 2 being designed for use with a roller-lifter and 3 for the flat. They are all inlet cams with small lift—$\frac{5}{16}$ inch—and are shaped for the same duration of valve opening, namely, 210 degrees of crankshaft movement. The inlet could, for instance, start to open 5 degrees after the upper dead center, and close 35 degrees after the lower dead center, which is fairly good timing for high and medium speed. With roller-lifter cams there is a 1/64-inch clearance between the valve stem and the lifter. The cam for the flat lifter is easier to shape with a greater clearance, which is made $\frac{1}{32}$ inch on the drawing.

The cam base circles are all 1¼ inch in diameter, and the roller ⅞ inch in diameter. The flat contact surface of the valve lifter 3, Fig. 1, is 1 inch in diameter, and the cam is rounded in such a manner that contact with the edge of the lifter is avoided.

The difference in the two roller cams may be seen in the drawing. The top portion of cam 1 is a single circle tangential to its straight flanks, which latter are determined by the position of the roller and the valve lifter clearance in the usual way; that is, the lines touching the roller and the cam-base circle at the moments when the inlet begins to open and close. The flanks of cam 2 are determined in the same manner, but the extremity of the cam is formed by an arc concentric with the base circle, and extended until it intersects the flanks. These intersections are rounded into a small radius. On the same drawings the dotted lines b represent the amount of valve lift. For each angular position of the cam the lift is equal to the distance between lines b and c taken in the direction of the center line of the valve-lifter. For cams 1 and 2 is a circle, passing through the center of the roller at the moment of valve opening, and for cam 3 it is the clearance circle.

The valve lifts obtained in such a manner for different angles between the cam center and the lifter can be plotted against the angles of crank position, thus giving valve-opening diagrams. Such diagrams for the cams of Fig. 2 are reproduced in Fig. 3, and are indicated according to the cam numbers by 1, 2 and 3. They all give the following timing: Inlet opens at 5 degrees after the upper dead center and closes 35 degrees after the lower dead center. However, the area of valve opening at any particular crank position is a more important thing to know than the valve lift. Referring to Fig. 4 and assuming that the gases flow through the valve opening parallel to the valve seat, the valve port area is:

$$S=\pi\times d_1\times h_1=\pi(d+h_1 \sin \alpha)\, h_1$$

or substituting $h_1=h \cos \alpha$

$$S=\pi(d+h \sin \alpha \cos \alpha)\, h \cos \alpha \ldots (1)$$

Valve Port Area

When the valve seat is flat the area S is proportional to the valve lift h, as then the second part in the parentheses disappears. Flat valve seats are seldom used, however, because they are hard to keep tight; they retard rather than promote the gas flow, making the gas change its direction suddenly, and besides they also become beveled in time. For bevel-seated valves the port area S is a function of the second degree, according to equation 1. However, this area may be considered directly proportional to the valve lift h in this case also, because the squared factor in equation 1 is relatively small and may be neglected. The error thus made is the slighter the smaller the horizontal

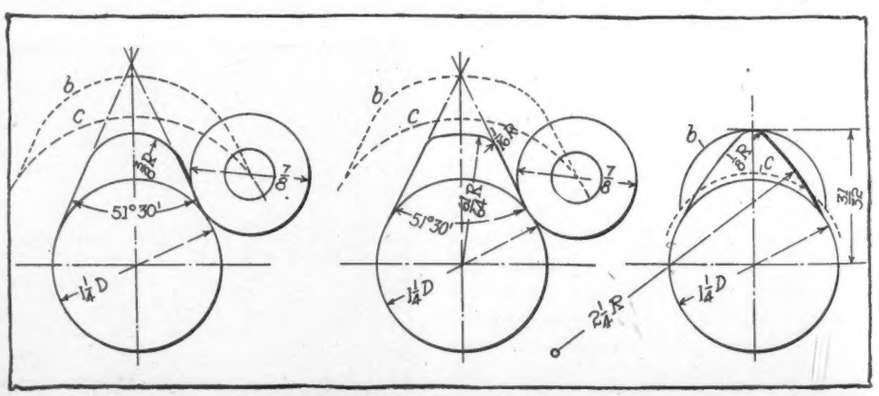


FIG. 2—INLET CAMS, WITH 5/16-INCH LIFT, SHAPED FOR 210 DEGREES OPENING; 1 AND 2 FOR USE WITH ROLLER LIFTER; 3 FOR FLAT LIFTER.

angle of the valve seat. Assuming, then, that the valve lift and port area are directly proportional, we may also consider curves, 1 2 and 3 of Fig. 3 as representing the variation of this port area with the crank position, and it is only necessary to construct a diagram of the proper scale to get the port opening areas in actual figures. We will suppose that the motors in question have valves of $2\frac{7}{16}$ inches clear diameter, d, Fig. 4, and that the valve seat has a 30-degree horizontal angle α. As the lift was made $\frac{5}{16}$ inch, the maximum valve port area is—

$Smax = \pi\ (2.4375 + .1355) \times .271 = 2.2$ appr. square inches.

If we make the lift of $\frac{5}{16}$ inch in Fig. 3 correspond to 2.2 square inches, the scale for the port area curves becomes known, and it is then possible to draw from these diagrams a number of conclusions as to the motor characteristics with the different poppet-valve lifting mechanism.

As may be seen from Fig. 3, the area enclosed by the curve 3 is slightly larger than that enclosed by curve 2, and these areas are both larger than the area enclosed by curve 1. The area of these curves is an important factor, determining the quantity of fresh charge which is drawn in by the motor during its suction stroke. It is an undisputed fact that the greater area of these curves the greater also will be the quantity of fresh charge drawn in.

If H = f t is the momentary valve port area in function of the crank position given by time t, one can write

$$\text{Motor Power} = P \int_{t_2}^{t_1} H\, dt$$

where P is used as an indication of proportion and the limits t_1 and t_2 are the moments of valve opening beginning and closing. However, in some cases, this equation requires a corrective factor, taking account of the elapsing of the intake gas velocities through the valve ports. This theoretical gas velocity is equal to the momentary piston displacement divided by the port area at the period considered.

$$\text{Gas velocity } v = \frac{\text{piston area} \times \text{piston shifting}}{s \times t}$$

$$\text{or, } v = \frac{dV}{f(t)\, dt} \text{ where } s = f(t)$$

The piston speed is given by the equations:

$$\text{Piston speed } c = \frac{v \sin(\alpha \pm \beta)}{\cos \beta} \quad \ldots\ldots\ldots (2)$$

$$c = v \sin \alpha\ (1 \pm \lambda \cos \alpha) \quad \ldots\ldots\ldots\ldots (3)$$

in which the letters correspond to those in Fig. 5.

Equation 3 is not exact. Assuming that the length of the motor connecting rod e = 13 inches, so that

$$\lambda = \frac{r}{e} = \frac{3}{13} = 0.231$$

the maximum error in equation 3 at the time when angle β is a maximum would only amount to about 2.5%, and may therefore be neglected, especially since equation 3 is the most convenient to use.

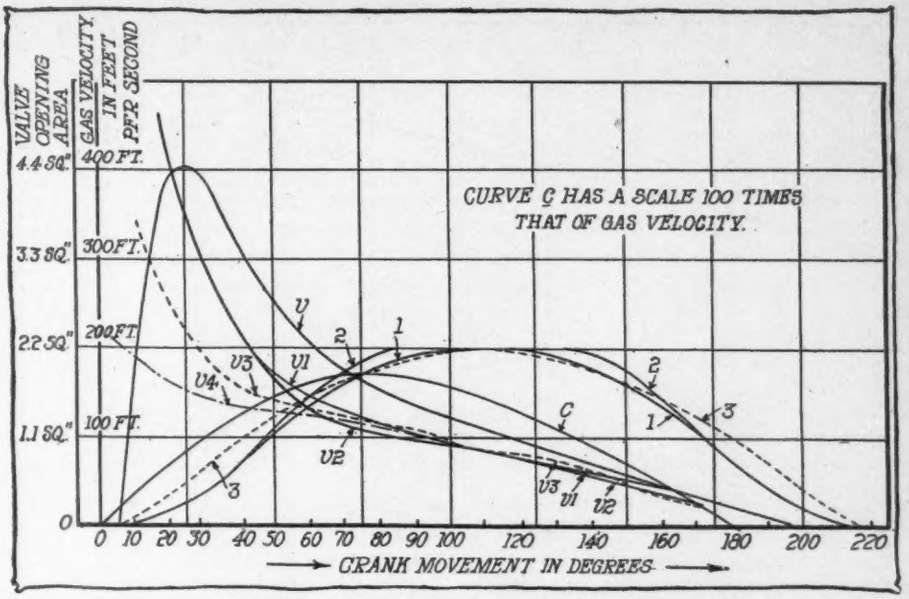


FIG. 3—VALVE OPENING DIAGRAMS OF CAMS SHOWN IN FIG. 2

The piston speeds for different angles a of the crank and for 1,000 revolutions per minute of the motor, as determined from the last equation, are given in Fig. 3 by curve C. The cylinder bore being 5 inches, the piston displacement at 1 foot per second piston speed is 236 cubic inches. Curves 1, 2 and 3 of Fig. 3 giving the momentary port area, and curve c the momentary piston speeds, the theoretical intake gas velocity curves can be determined now for each of the cams in question. These gas velocities are designated in Fig. 3 as v_1, v_2 and v_3, corresponding to the numbers of the cams.

Power With Different Cams

Comparing these three curves, we notice a maximum difference of only about 10 percent between v_1 and v_2. Moreover, this difference occurs when the inlet openings are near their maximum, and when the gas velocity is much lower than at the beginning of the opening. Therefore, in respect to motor power cam 2 will show no great advantage over cam 1. With slow-running motors, the difference between these cams may be absolutely imperceptible.

With these cams under the assumed conditions, the inlet gases are strongly choked better results than the other cams, in reduring the earlier part of the valve opening, and consequently there is considerable vacuum inside the cylinder during this period. This vacuum, besides causing direct loss of motor power, also sucks oil past the piston, which tends to cause carbonization. A point in favor of high intake velocity is a more complete vaporizing and mixing of the gas particles with the air when entering the cylinder. But normal gas velocities should be sufficient for that, so that any increase would be a pure loss.

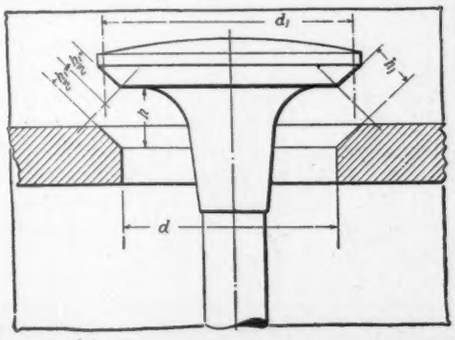


FIG. 4

Referring to Fig. 5, it will be seen that cam 3, with the flat valve lifter, shows far spect to motor power. With this cam the valve opening is much quicker at the beginning than with the other cams. The theoretical gas velocity drops much more quickly with cam 3 than with cams 1 and 2, and consequently the intake gases are much less choked with this cam during the early part of the inlet. The difference in velocities with cam 3 and the roller cams, respectively, amounts to 20-30 percent during a crank motion of 45 degrees, and, furthermore, the choking effect is proportional to the second power of the gas velocity at least. The quantity of fresh charge admitted to the cylinder during the first half turn of the crank will be considerably greater with valve-lifting mechanism 3, and this will reduce the vacuum inside the cylinder, together with its bad results. This mechanism is decidedly advantageous, except that it requires very strong valve springs, because the first part of the curve of cam lift is very steep. The stronger the valve springs are, the more the valve seat and valve mechanism are subjected to wear, and constructions 2 and 3 are particularly disadvantageous because of the great sliding motion of the cam against the lifter. Of course, cams for roller lifters can be shaped to give the same quick opening as cam 3, but the objections to quick opening are then greater.

Valve Spring Strength, Wear, Noise

With valves of the same weight and the same lift acceleration, the roller lifter, being

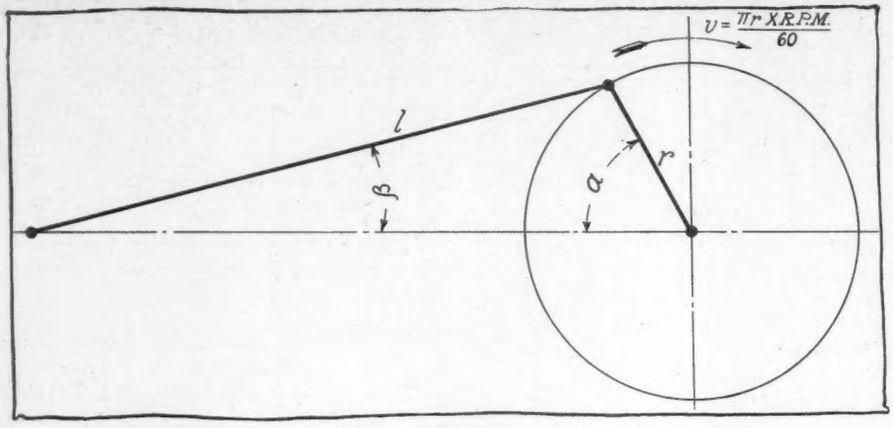


FIG. 5—FLAT-LIFTER CAM SHOWS GOOD POWER

heavier than the flat one, requires stronger valve-closing springs. There is but little wear on the faces of cams and rollers due to the roller action, providing they are properly hardened and the springs are strong enough to keep them in contact. Therefore, the wear of them cannot be given here as an objection to strong springs, but the valves coming under action of the stronger springs, and with a quicker motion against their seats, cause more noise and become leaky more often, which is due to increased hammering into the seats of carbon particles. This, taken into consideration alone, sometimes may induce the designing of cams of fancy shape with flanks starting lingeringly, and consequently with a less favorable opening diagram.

The Gas Velocity

In curves v_1, v_2 and v_3 of Fig. 3, it will be noticed that the gas velocity also gradually drops during the period when the valve openings decrease, because of a more rapid decrease in the piston speed. From a velocity of 170 feet per second at the moment of greatest valve opening, the gas velocity drops to about 50 per second during the following 60 degrees of crank travel. At the lower dead center the inlet valves still have openings 0.7 square inch, cams 1 and 2, and 1 square inch, cam 3, respectively. The last 10 degrees of crank movement before the dead center need not materially influence the change of gas velocity, and during the following crank movement it can, therefore, not possibly be greater than 50 feet per second, as it was at 170 degrees crank position. By assuming that the gas velocity remains 50 feet per second during the whole period, the inlet valve remains open after the crank has passed the lower dead center, and by further assuming a mean figure of valve opening area for this time we can determine the maximum quantity of fresh charge which can be forced into the cylinder by gas inertia if no losses take place.

Mean valve port area for cams 1 and 2 = 0.45 square inch.

Mean valve port area for cam 3 = 0.62 square inch.

Duration of 45 degrees crank movement at 1,000 revolutions per minute = 0.0075 seconds.

1—Quantity of gases $50 \times 12 \times 0.45 \times 0.0075 = 2$ cubic inches.

2—Quantity of gases $50 \times 12 \times 0.62 \times 0.0075 = 2.8$ cubic inches.

Reason of Late Inlet Closing

The piston displacement being 117.8 cubic inches, these quantities constitute 1.7 per cent and 2.38 per cent of the piston displacement volume. These figures are the maximum possible, and they show that a late closing of the inlet valve cannot have any direct influence on the motor power. Only if the motor were choked strongly at high speed with partly closed throttle or by smaller valves so that there would be considerable vacuum in the cylinder, would the supplementary cylinder filling through late inlet closing be of direct value. The main reason for a late inlet closing is that the cam becomes of fuller shape, affecting the valve port area in such a way that the intake gas velocity is kept lower during the piston suction stroke and the quantity of fresh charge then drawn in is increased. This influence of late inlet closing on the motor power is thus indirect.

To obtain an air velocity of 170 feet per second, without considering losses, a difference in pressure of approximately 0.25 pound per square inch is required. The difference in pressure required for an air flow, if this difference is not very great, may be found from the equation:

$$P = \frac{V^2 \times Q}{2g \times 144} \text{ pounds per square inch.}$$

where

V = air velocity in feet per second,

Q = weight of 1 cubic foot of air—about 0.081 pound,

g = gravity acceleration = 32.16 feet.

A flow of 50 feet per second requires only about one-twelfth the pressure difference from a flow of 170 feet per second. From this it is seen that without extra resistance the vacuum inside the cylinder necessary for the gas flow is very small, but, owing to the existing resistances, it may amount to some pounds per square inch in motors only slightly throttled. Therefore, the curve of actual gas velocities through the valve ports differs greatly from the theoretical one, especially at the beginning of the valve opening. This actual velocity will follow approximately curve v, Fig. 3, the shape of which is merly a rational guess. At the 170 degrees crank position this curve v shows no marked difference from curves v_1, v_2 and v_3, and there may be seen also the little direct influence of late inlet closing.

Relative Port Area and Lift

From the gas velocity curves it may also be deduced that it is more important, from the standpoint of motor power, to have a quick opening inlet of small size than a slower opening inlet of large size. And it is also better to obtain a certain valve port area through large valve diameter and small lift than small diameter and high lift. The cams for high and small lift being made of the same type, say, for instance, both after Fig. 2, No. 1 will have coinciding valve opening curves on the length of their straight flanks. The valve with smaller lift, but with a larger diameter, will also have a larger port area during this time, and this will help to reduce the high intake gas velocity at the inlet beginning. The influence of a change in the time of valve opening is noticeable by comparing curves v_3 and v_4 of Fig. 3. Curve v_4 corresponds to cam 3 with the valve opening starting at "0" degree crank position. It represents a much lower and also much more constant gas velocity at the beginning than curve v_3; and, besides, these curves practically coincide further along. It follows that, theoretically, an early inlet opening is advantageous, and this statement is true for high speed. In practice, however, better results are sometimes obtained with somewhat later inlet openings, but if a certain long duration of inlet opening is desired, it is better to start and close early, because a too late inlet closing will result in motor power loss. The inlet valves should close before the moment when the piston in its backward stroke compresses the charge inside the cylinder to the pressure in the intake pipe. With a fairly opened throttle, and

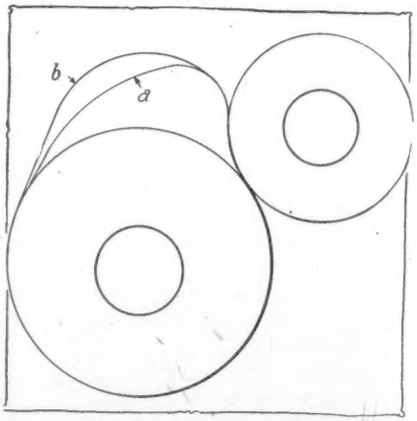


FIG. 6—INLET CAM DESIGNED TO GIVE CONSTANT VELOCITY OF GASES—IT OPENS AT UPPER DEAD CENTER

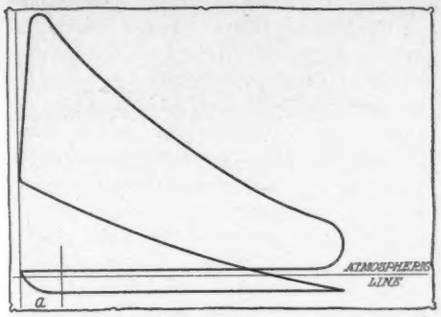


FIG. 7—PRESSURE DIAGRAM OF CYLINDER

at normal speed, the cylinder at the end of the suction stroke will hardly contain more than 80-85 per cent of a full charge, and the suction line in the pressure diagram, Fig. 7, will be below the atmospheric line, but at the same time the pressure in an intake pipe of sufficiently large diameter will not be much less than atmospheric. Also the amount of supplementary cylinder filling is very small under the conditions cited, and, therefore, there is no likelihood of a return flow until after about 10 per cent of the return stroke, or nearly 45 degrees of crank movement. A lag of 30-40 degrees in the closing of an inlet valve is, therefore, not harmful in this respect. However, when the throttle is nearly closed, the pressure inside of the intake pipe will not differ much from that inside the cylinder, and then the piston, in making 10 per cent of its return stroke while the inlet valve is open, will cause a part of the cylinder charge to be expelled into the inlet pipe. This results in loss of power and efficiency.

Some Compression Ratios

If the compression space is 25 per cent of the total cylinder volume, and the compression starts at 10 per cent of the return stroke, the effect will be the same as if the compression space were 27 per cent; but with a compression beginning at 2-3 per cent of the return stroke, corresponding to a lag in inlet closing of 20-25 degrees, the rated compression of 25 per cent may be figured on. Other conditions being equal, these compression ratios will result in the following compression and explosion pressures, and theoretical efficiencies:

$$P_{25} = \left\{\frac{v_1}{v}\right\}^{1.35} \times 13 = 84.5$$

	Thermal efficiency per cent	Explosion pressure
pounds square in. absolute	300	39
Compression pressure $P_{27} = 76$ pounds square in. absolute	270	37.5
Difference = ... 8.5	30	1.5

Inlet of Constant Gas Velocity

In conclusion it may be interesting to lay out a cam to give a constant velocity of intake gases, the inlet beginning at the upper dead center. Such a cam, designed for a roller of ⅞-inch diameter, is shown in Fig. 6. A more practical form of cam, with late inlet closing, is given in same figure by line b. Both cams require extremely strong valve springs to keep the roller against the cam during the upward motion, and they also cause considerable side pressure and wear on the valve lifter guiding surfaces, which is a rather serious disadvantage.

Exhaust Gas Velocity Complicated

Having thus discussed the phenomena of the inlet with poppet valves, we could now take up the exhaust in the same way. However, the determination of exhaust gas velocity is a very complicated problem. As long as the pressure inside the cylinder is higher than the pressure in the exhaust pipe we have a flow of gases through an orifice under a pressure difference. This flow depends on the physical properties of the gases, their temperatures, etc. Moreover, the flow occurs under variable pressure differences. It would, of course, be possible to construct a theoretical curve of gas velocity, but it is such a complicated matter that the results would hardly justify the attempt. Being already familiar with inlet valve opening diagrams, and assuming that exhaust valve diagrams closely resemble them, some interesting conclusions can be drawn.

The exhaust velocity curve and also the curve of the pressure inside the exhaust pipe is most likely undulatory, with waves of great amplitude at the beginning, quickly decreasing. A sudden escape of gases is followed by a heavy drop in pressure inside the cylinder, which may become lower than atmospheric. This vacuum is then filled in by the outside pressure, with a certain excess pressure due to gas inertia; again the gases expand, and so forth. Of course, all this occurs during a fraction of a second.

In the case of gradually opening valves the exhaust has to begin at some point before the piston reaches its lower dead center; otherwise there would be considerable back pressure on the piston during the early part of the exhaust stroke, and consequently loss of power, the latter greater than that due to a reasonably early exhaust opening. If the exhaust begins to open early it may be more lingering. The pressure inside the cylinder at the lower dead center should be practically equal to that in the exhaust pipe.

Large Exhaust Valves

The exhaust gas velocity can be depicted approximately by noting the character of the inlet valve opening and supposing it to be shifted over to the right 20 or 30 degrees. An exhaust cam for 40 degrees lead and 5 degrees lag gives the maximum opening at 72½ degrees after the lower dead center, or about 25 degrees before the maximum piston speed is attained. The gas velocity curve will, therefore, slowly rise from o degree to 72½ degrees; then rise at a quicker rate to the point of maximum piston speed and gradually drop from this point to zero at the upper dead center. The smaller the gas velocity during this period the less resistance there will be on the piston. An exhaust valve giving a large, quick opening will be favorable not only in this respect but will allow also of a later exhaust beginning. The motor power can be increased by using large exhaust valves as well as large inlet valves.

Exhaust Valve Timing

It is advisable in many cases to close the exhaust valve after the piston reaches its upper dead center, and particularly so if the exhaust valve closes gradually. At high speed there is considerable back pressure at the end of the piston stroke, and if the exhaust were closed exactly at o degree the pressure line in diagram, Fig. 7, from this point on would follow an expanding curve during the piston travel a, and the admission of fresh charge would begin only at the end of the travel a, consequently the percentage of spent gases remaining in the cylinder would be greatly increased. If the inlet valve opens before the piston has passed through the distance a, a part of the spent gases may get into the inlet passages and cause back firing, if the charge be poor. Moreover, these spent gases penetrating into the inlet passages cause a reverse flow and reduce the inertia of an uninterrupted flow at high speed. If the exhaust valve remains open a trifle beyond the upper dead center, there may be time for an equalization in pressure between the cylinder and the exhaust pipe, before the piston moves down perceptibly. In this way the distance a of Fig. 7 will be greatly decreased, and the quality of the cylinder charge improved. Sometimes the inlet and exhaust opening periods are made to overlap, but one should not go too far in this, avoiding the passage of spent gases back into the inlet. With a large size inlet manifold this danger is lessened. It does not, however, seem reasonable to open the inlet before the upper dead center.

Regarding Rotary Valves

From what has been said, it can be seen that quick closing of the exhaust is also preferable, with respect to back pressure, quantity of spent gases remaining in the cylinder and time of closing. The quicker the valve opening and closing, the greater the power and flexibility of the motor. In this respect the poppet valve is inferior to rotary valves, sliding sleeves, piston

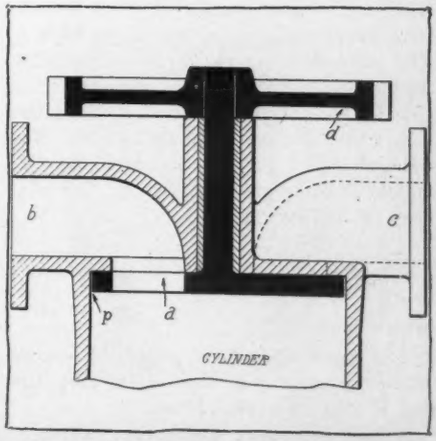


FIG. 8—CYLINDER-HEAD FOR SINGLE-PORT ROTARY VALVE

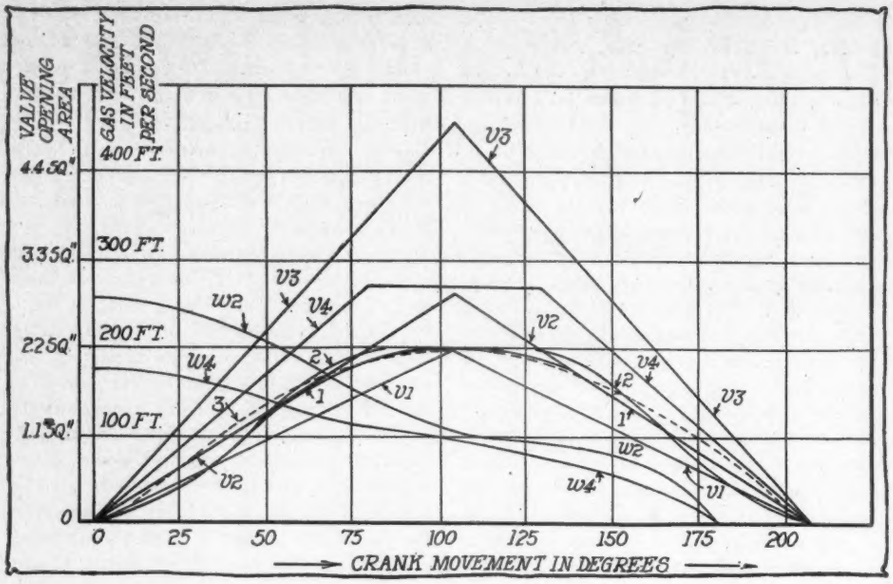


FIG. 10—VALVE-OPENING DIAGRAMS

valves, etc. Fig. 8 illustrates a cut through the cylinder head of a rotary valve motor with a flat disc valve a, placed inside the explosion chamber and bearing against its top part. The inlet and exhaust passages are denoted by b and c respectively. The gear d is mounted on the valve stem and revolves the valve a. The valve a has a single port, registering with the inlet and exhaust ports formed in the cylinder heads. This valve port is of a sector shape—see m in Fig. 9, which figure shows the top view of the valve disk. The valve is designed to rotate at half crankshaft speed in a four-cycle motor; and the same timing will be assumed as for the poppet valves discussed. The duration of the inlet extending over 210 degrees of crank motion, the valve must remain open during 105 degrees of its own revolution and making the valve port of the same size as the inlet in the cylinder head—whereby the greatest maximum opening is obtained—the radial valve port edges must enclose an angle of 52 degrees, 30 minutes. With this type of valve the prevention of leakage, particularly at the part p adjoining the port m, is not easy. This part p must be made of the proper width, say about 3/16 inch. It must not be much larger than this because that would reduce the area of the port m. The valve stem can be ¾ inch in diameter, its bushing ⅛ inch thick, and there should also be some cylinder metal at the lower end, where the gas ports are located. The dimensions of port m are thus approximately fixed as given in Fig. 9. The total area of the port is

$$S = 2\pi \frac{52.5}{360} \times 1.5325 \times 1.3125 = 2.2$$

square inches,

or the same as that of poppet valves of 27/16 in clear diameter, 5/16 inch lift and 30 degrees angle of seat.

It was mentioned above that the maximum valve opening is not important by itself, as the time factor also enters into the problem. In rotary valves driven at

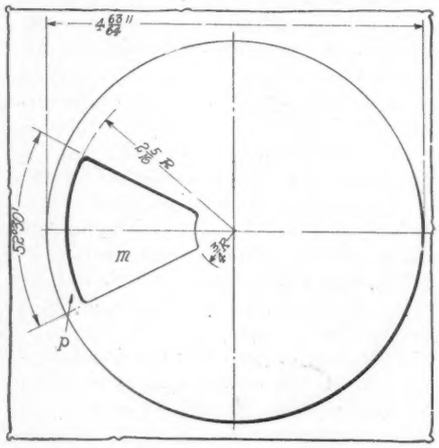


FIG. 9—TOP VIEW OF VALVE DISK OF FIG. 8

constant speed and with a port shaped to give the maximum possible opening area, the area of opening at any moment is proportional to the angle through which the valve has turned. The area of opening increases uniformly from the beginning of the opening until the maximum is obtained, and then decreases in the same manner. Therefore, the curve representing the change of this area with reference to the crank movement will be an equilateral triangle. This curve for the valve shown in Fig. 8 is v_1 in Fig. 10. For the sake of comparison, curves 1, 2 and 3 of Fig. 3 are reproduced in Fig. 10, but all openings start at o degree of crank position. The cylinders are supposed to be in the same plane as the crankshaft—not offset. It will be seen that curve v_1 has a much smaller enclosed area than curves 1, 2 and 3. Moreover, the valve opens and closes but a trifle quicker than with cams 1 and 2, Fig. 2, and less quickly than with cam 3, Figs. 1 and 2. The theoretical curve of gas velocity will not be so good with this rotary valve as with poppet valves, but the actual conditions of the gas flow may be better. In poppet valves the gas flows into the cylinder through a comparatively narrow annular opening, which offers considerable resistance. Besides, a part of this annular opening is close to the walls of the explosion chamber, unless the valve is located in the center of the cylinder head, and that tends to change the flow through the valve. The paths of unequal length which the gas particles passing through different sections of the valve opening must travel further diminish the value of the poppet valve port effective area. The rotary valve, on the contrary, will allow a practically constant flow through its total area, and with a small loss. This is a most important consideration.

The power efficiency of the Knight slide valve engine, as well as its noiselessness, has been the instigation of much discussion, and many efforts are being made to replace the poppet valve.

(To be continued.)

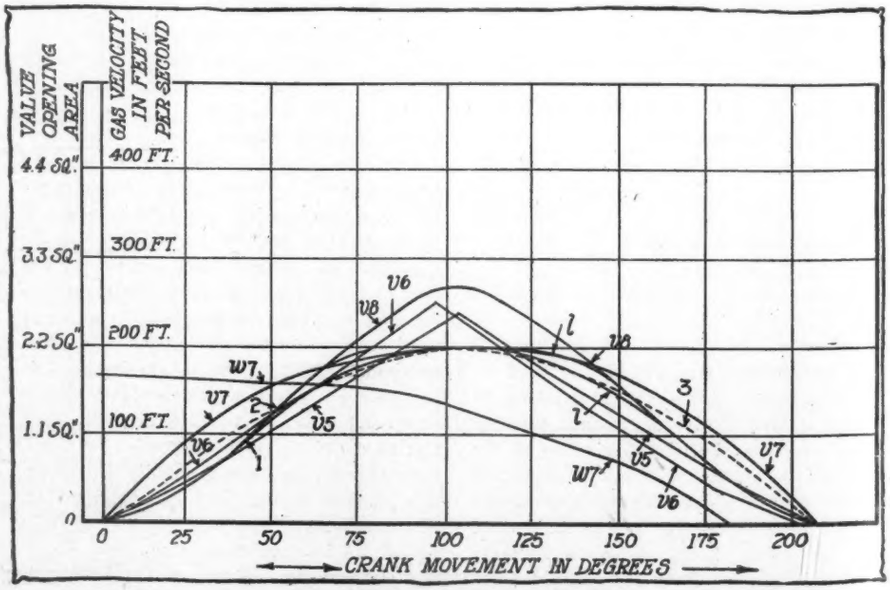


FIG. 10A—VALVE-OPENING DIAGRAMS

Current Motor Car Patents

Adjustable Spark-Plug — No. 956,380, dated July 26; to Robert E. Estes and John P. Inman, Midland, Tex.—This spark-plug is unlike the ordinary plug in that both the insulation and the insulated electrode are adjustable. As shown in Fig. 1, the insulating-core C, has a snug-fitting bushing B surrounding its middle portion; this bushing is threaded externally and adapted to fit the internal threads of the body of the plug; the insulation is thus rendered adjustable and the core locked against movement or leakage by means of the lock-nut N. The insulated electrode E is also threaded so that by loosening the lock-nuts L and L1 and turning it by means of the knob K, the distance between the end and the ground-portion or ground electrode G may be regulated. Some of the advantages of this type of plug are: that the insulating core and electrode may be readily removed and replaced without the necessity of disturbing any packing; and deposits of oil, water or carbon may be removed from the spark-gap without removing the plug from the cylinder of the motor.

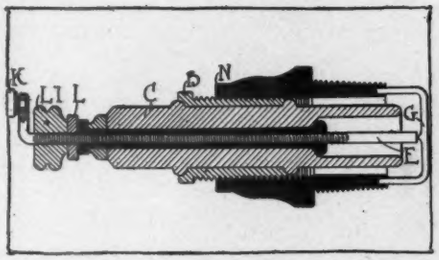


FIG. 1—ADJUSTABLE SPARK PLUG

Demountable Rim—No. 965,715, dated July 26; to Charles Johnson, Buffalo, N. Y. —This patent relates to a demountable rim for motor car tires whose chief advantage lies in the simplicity of its construction. A sectional drawing of it is illustrated in Fig. 3; a reinforcing metal bank B, having an inwardly extending flanged portion on one side and an outwardly extending flange G on the opposite side, is secured to the felloe F of the wheel; the inwardly extending flanged portion is arranged to engage with the beveled part of the rim ring R which is riveted to the tire rim T. The inner portion of the tire rim T rests upon the flange G of the band B and the outer portion, through the rim ring, on the bevel surface of the inwardly flanged portion. To remove the tire and rim, one is required merely to remove the nuts N attached to the bolts S which pass through the felloe at intervals around the wheel; the tire and rim then may be readily disengaged from the wheel; there are no loose and troublesome rings.

Puncture-Proof Tire—No. 962,230, dated June 21; to William A. Lurie, Chicago—The important feature of the tire covered by this patent is the pad P, Fig. 2, which is comprised of strips of felt wrapped in canvas, and which is designed to fit inside of the casing as illustrated, between the inner tube and the casing, to render the tire puncture-proof. The felt is inclosed in two wrappings of canvas whose lateral edges are looped to form pockets, and with a cord passing through each of the pockets. The edges enlarged by the cords are adapted to fit into grooves in the casing, so that when the tire is inflated the edges are compressed into the grooves and the pad anchored against displacement. Fiber linings of a somewhat similar design have given good service.

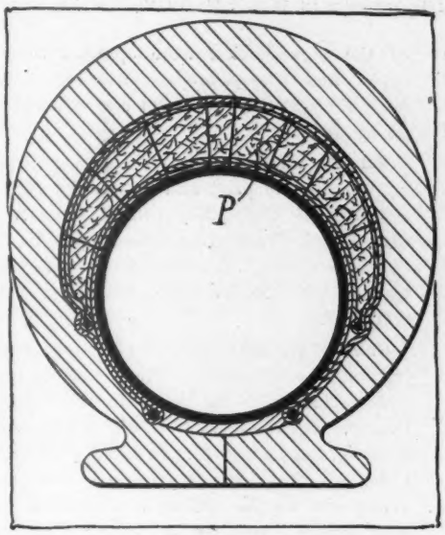


FIG. 2—PUNCTURE-PROOF TIRE

New Type of Gas-Lamp—No. 965,749, dated July 26; to Edwin M. Rosenbluth, Philadelphia, Pa.—The point in which the lamp covered by this patent differs from similar types of acetylene gas lamps now in use is in the introduction of a burner which gives two flames, one behind the other, and the arrangement of the condensing and projecting reflectors so that each flame is in the focal center of one of the reflectors. This construction is illustrated in Fig. 4, a single burner B, is designed to give off two flames A and A1; A being in the focal center of the parabolic reflector D, and A1 in the focal center of the reflector C.

Armored Pneumatic Tire—No. 965,281, dated July 26; to John Corwin, Chicago, Ill.—The tire construction to which this patent relates is quite different from other types of armored tires now in use, as a glance at the sectional drawing Fig. 5 will show. A welt portion W, which is made of fabric or leather, or some similar tough and flexible material, is concaved on its inner surface to conform to the tread portion of the tire casing T; a tread strip S of similar material overlies this welt portion and projects laterally beyond its edges; closely arranged metallic plates P cover the surface of this strip, and the plates, strip and welt are secured to the tire casing by means of rivets R.

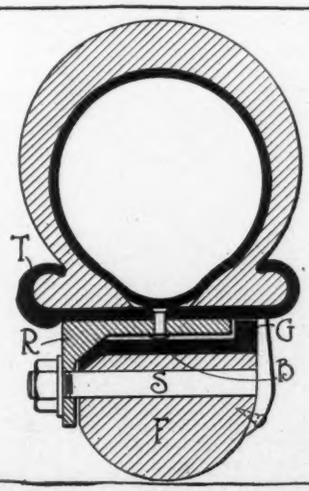


FIG. 3—NEW DEMOUNTABLE RIM

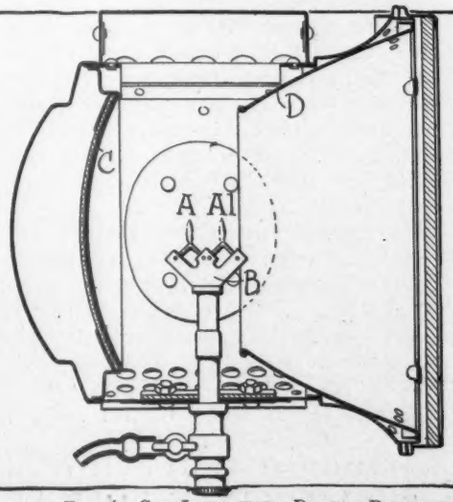


FIG. 4—GAS LAMP WITH DOUBLE BURNERS

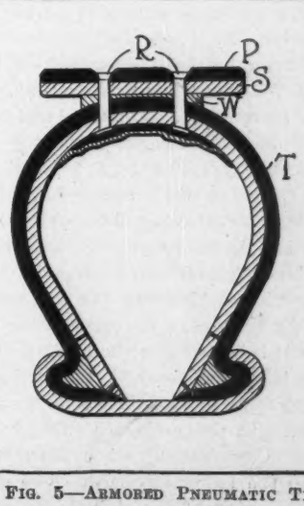


FIG. 5—ARMORED PNEUMATIC TIRE

From the Four Winds

WHITE TRUCK PROMINENT IN WAGON TRAIN EQUIPMENT AT CHICKAMAUGA PARK

BADGERS at Elgin—Wisconsin will be well represented at the Elgin national stock chassis road races. President Moore, of the W. S. A. A., and nearly all of the officials will go in a body, accompanied by members and officials of the Milwaukee A. C. The Wisconsin delegation will number more than 300.

Goes Back to Traps—The trap system that had been abolished in Hingham, Mass., 5 weeks ago through the efforts of the Hingham Automobile Club has been put in operation again by Chief W. I. James, of the police department. The chief stated that the motorists did not keep faith with him as they promised. He stated that they were to slow down to 15 miles an hour and sound the horn at intersecting streets, but many of them have not done so. He also says the club promised to post signs of warning, but this has not been done, and so the only recourse has been to go back to working the traps.

Wildwood Meet Off—The motor car and motor cycle races scheduled to be held at Wildwood, N. J., on September 3 and 5 have been officially declared off by the North Wildwood Automobile Club. Early in the season races were scheduled for July 4, July 30 and Labor day and the preceding Saturday. The July 4 meeting was held and was very successful, although the committee having charge of the prizes has failed so far to give the winners their trophies and this has occasioned great dissatisfaction. Although the Independence Day meet was so successful, the North Wildwood Automobile Club felt that other places in south Jersey that were benefited by the run and races did not do their share in bearing a proportionate part of the expenses. Consequently when the matter of holding the Labor day meet came up at a recent meeting of the club many members of the organization were opposed to the races, and they were declared off. The meet scheduled for July 30 was allowed to go by default.

Ringler Made Pathfinder—Harvey Ringler will be the pilot and pathfinder in the first annual roadability run of the Ocean City Beach Front Association, open to all passenger cars, in co-operation with the Quaker City Motor Club, Saturday, September 3.

Calls State Meeting—The annual meeting of the Wisconsin State Automobile Association will be held in the Hotel Pfister, Milwaukee, Wis., on Wednesday evening, September 14. In issuing the call, President M. C. Moore urges all owners in Wisconsin to be present, regardless of membership. One of the officials of the A. A. A. will be present to make an address. At this time officers will be elected, and it is believed that Mr. Moore will be honored with re-election as head of the organization.

Rules Against Oldfield—On petition of the Milwaukee Automobile Club, the A. A. A. contest board has refused to sanction the races planned by Barney Oldfield on the state fair park mile track at Milwaukee, Wis., on September 17. Oldfield contracted with the fair board to give exhibitions during the last 2 days of the state fair, September 13 to 16, in consideration of which he is to be given the use of the track for a track meet on the Saturday following. The club officials believe the right to hold meets in Milwaukee belongs to the club exclusively, and they are upheld by the contest board. Following this announcement, Oldfield received another blow, when the fair board discovered that he did not intend to use his Benz during the fair, reserving this as the big attraction for the race meet. He is to race against a Wright aeroplane during the fair. Unless Oldfield promises to use the Benz the board will abrogate the contract.

Mack Truck a Winner—The entry of Shane Brothers & Wilson, the Mack, driven by E. Turgeon, is the tenth winner in the recent roadability run for motor trucks conducted by the Philadelphia North American and the Quaker City Motor Club. This was in the class for mammoth trucks, gasoline, above 5 tons, which was not decided by the contest committee at its meeting last Tuesday night.

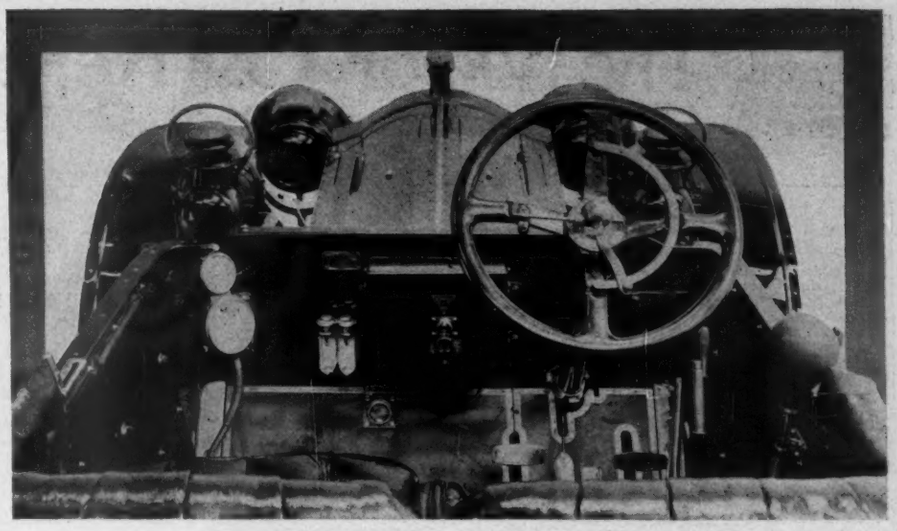
Truck by the Regulars—An experiment was tried recently by Major G. G. Bailey, quartermaster of the Department of the Gulf, of the regular army, during the recent maneuvers. A White motor truck was installed to transport provisions from Chattanooga to Chickamauga, a distance of some 11 miles. Owing to the continuous rains, the road conditions during much of the time were unfavorable, and yet the truck made daily trips to Chattanooga, and on many occasions, two and three trips. The average time for the trip of 22 miles was 2¼ hours; the best average by army teams, 7½ hours. So satisfactory to the army officers was the operation of the truck that they stated that the one truck easily replaced six teams of four mules to the team. The upkeep expenses, of course, of the motor truck as compared with twenty-four mules, was very much in its favor. During the army maneuvers the truck was used to distribute ammunition to the gray army. This work was started about 9 o'clock in the morning and completed at 12, a demonstration of speed never before accomplished in the army maneuvers, it having been stated by the officer in charge that six to eight mule teams at the greatest speed

possible would have required until 3 or 4 o'clock in the afternoon. The advantage of the speed in actual warfare is almost beyond calculation, often meaning the saving of a corps or the entire army from defeat.

Long Island Entries—Grant in the Alco has been entered for the grand prix on October 15. Grant also is in the Vanderbilt. The Simplex Automobile Co. of New York also has made a Simplex entry for the Vanderbilt. It will be driven by Ralph E. Beardsley.

Arranges a Sociability—F. J. Shoyer, chairman of the Ocean Front Association, Ocean City, N. J., has completed arrangements with the Quaker City Motor Club for the latter's sociability run on September 3 from Philadelphia to Ocean City. The run will leave the Hotel Walton, Philadelphia, and end at the Hotel Normandie, Ocean City. Secretary Harbach, of the Q. C. M. C., is confident there will be fully 100 cars in line.

Speedometer At Left Side—The left side of the dash is a good place for the speedometer. Consequently, the Packard Motor Car Co. has arranged to attach speedometers on the left side if desired, although the right side will remain standard if the position is unspecified. The accompanying illustration shows the way the Packard company sets a speedometer diagonally at the left side of the dash. This position allows the speedometer to be read easily by both the driver and the occupant of the left front seat. When the speedometer is on the right side, the passenger on the left seat cannot see it at all and often it is difficult for the driver to see through the spokes of the steering wheel, especially when driving at speed. The left side position also saves the driver from answering the questions of the curious and the nervous. Any speedometer may be attached to a Packard in this position because the different speedometer manufacturers are prepared to supply the Packard company with instruments driven from the left front wheel.



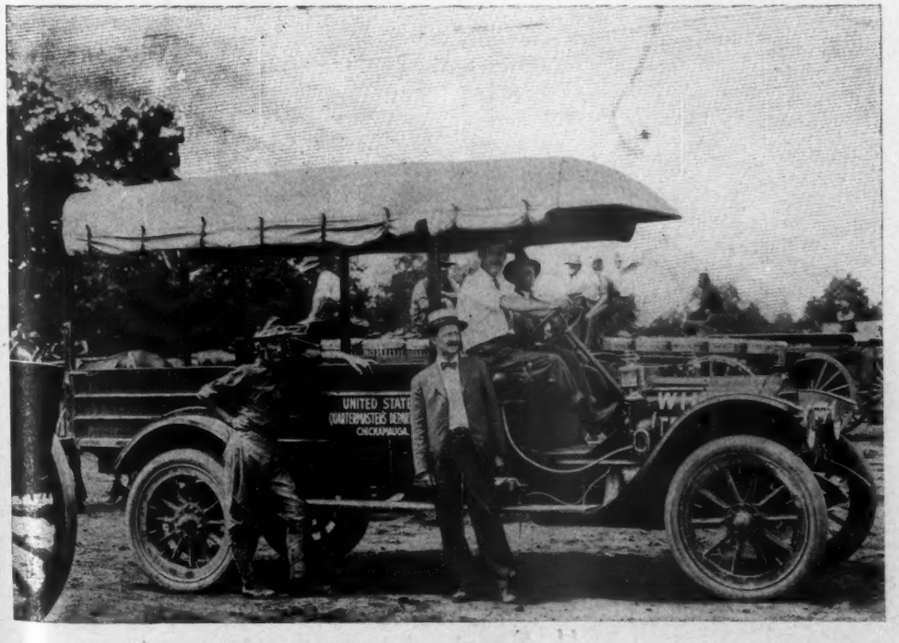
FITTING SPEEDOMETER ON LEFT SIDE ON A PACKARD

Fixes Upon Sociability Date—The Syracuse Herald sociability run, it is announced, will be held the week following the state fair, which occurs at Syracuse, N. Y., September 12-17, inclusive. It is about determined that the run will be had on Saturday, September 24. This run was instituted by the Syracuse Herald last year and was a great success, over sixty cars participating. This year it is expected this number will be greatly augmented. The Herald is to ask the opinions of the motorists regarding the route of the run, so this feature of the program has yet to be settled. The matter of trophies, which are awarded by the newspaper, is not yet settled, but it is expected that silver cups will be awarded to the winning man and woman drivers. There is also in consideration the plan of giving gold and silver medals as second and third prizes and having bronze medals struck off as souvenirs of the run to all participants.

Reward for Mischief-Makers—The Automobile Club of Pittsburg has renewed its offer of $500 reward for the arrest and conviction of the miscreants who placed spikes and tacks along the road at Adams Station to cripple the motor cars started recently on a big run. A plank containing spikes was recently found near the well-known Shiloh church and this has given rise to a new clew.

Syracuse Card Issued—C. Arthur Benjamin, director of contests on motor day of the week of the state fair, at Syracuse, N. Y., September 12-17, which is under the direction of the Automobile Club of Syracuse and the Syracuse Automobile Dealers' Association, announces the list of events, of which there are nine. The state fair course is considered one of the best of the country's circular mile tracks.

Advertising Indianapolis—About 150 of the principal business men of Indianapolis made a trade extension trip August 18 and 19 to sixteen cities and towns between Indianapolis and Paris, Ill. The purpose of these trade extension trips is to advertise Indianapolis products and become personally acquainted with the business men in the places visited. A majority of the party rode in special interurban cars over the line of the Indianapolis, Terre Haute and Eastern Traction Co. A number, however, found more pleasure in making the trip in a number of motor cars supplied by the Premier Motor Mfg. Co. and the Overland Automobile Co. Among men identified with the motor car industry making the trip were: J. H. Daugherty, of the Nordyke & Marmon Co.; H. A. Townley, of the Gibson Automobile Co.; David Wallace, of the Indianapolis motor speedway; Will H. Brown, of the Overland Automobile Co., and G. W. Chapman and H. H. Hubbard, of the G & J Tire Co.



WHITE TRUCK USED IN ARMY MANEUVERS AT CHICKAMAUGA PARK

The Motor Car Repair Shop

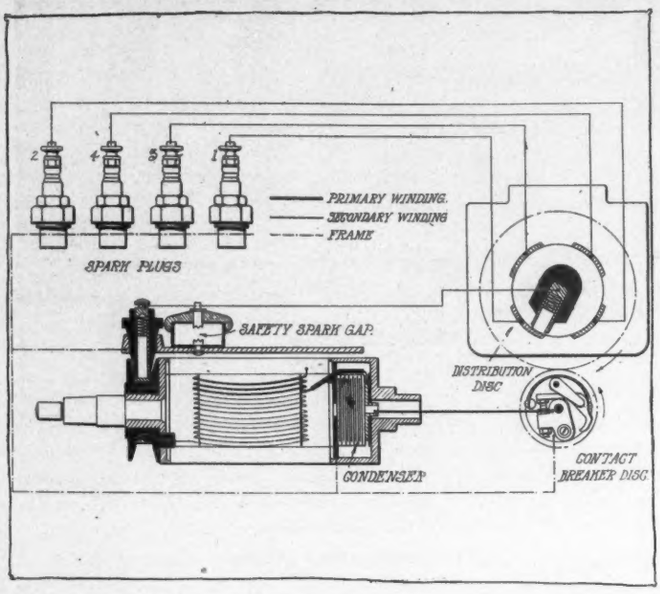


FIG. 1—WIRING DIAGRAM OF BOSCH HIGH-TENSION IGNITION SYSTEM

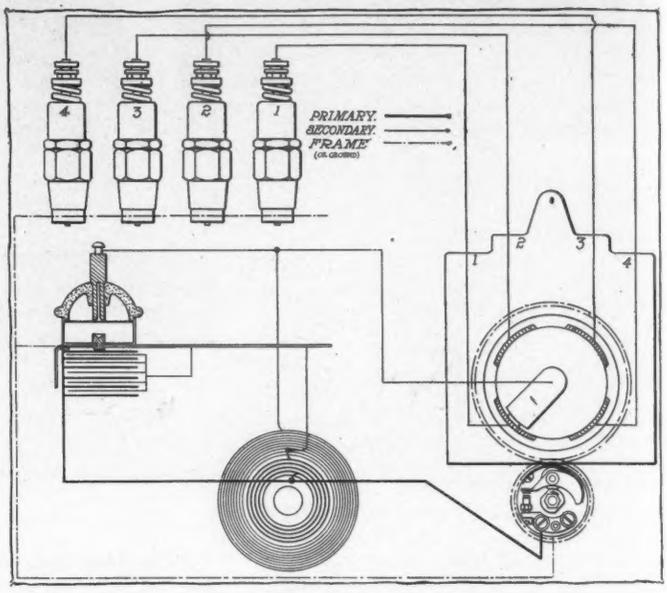


FIG. 2—DIAGRAM SHOWING ELECTRICAL CONNECTIONS OF K-W SYSTEM

THE larger manufacturers of complete ignition systems have realized for some time that much of the efficiency of their appliances depends upon the knowledge of the repairmen and motorists into whose hands they fall. And to educate the motoring public into the construction and arrangement of the various features which comprise an ignition system instruction books are issued in which not only a number of possible faults are described with their remedies but plans or diagrams showing the wiring connections and relation of one feature to another are given. These are of great value to those who are occasionally called upon to readjust or rearrange an ignition system after some would-be electrician has been experimenting with it.

The wiring diagrams of four ignition systems are shown herewith, all of which are of the jump spark type with magnetos as a source of current. There are two single high-tension magneto systems represented, and two dual low-tension magneto systems. To read an ignition diagram one should endeavor to trace the flow of electric current from its origin to the point of action, the points of the spark plug, and then back to the source. The source is almost always either a battery or the magnets of a magneto; and all features of a diagram generally are drawn to represent, as closely as possible, the construction of the devices which they indicate. Primary and secondary coils combined are employed to generate the high-tension current of from 15,000 to 20,000 volts required in the jump-spark ignition systems; these are indicated by a course winding for the primary and a thin wire winding for the secondary, both coils surrounding a single core.

It must be borne in mind that current can only flow when a circuit is complete. In Fig. 1 a plan is shown of a Bosch high-tension magneto system. In this construction the primary and secondary windings as well as the condenser are a part of the armature. As the armature revolves a primary current is generated in the coarse winding, which flows as long as the platinum points of the circuit breaker are together. This flow of current through the coarse winding causes a very strong current of greater pressure or electromotive force to surge up in the secondary winding. The apparatus is so designed that as the pressure becomes greatest the flow of current through the primary is stopped or interrupted by the separation of the points of the circuit breaker. This sudden break of the primary demagnetizes the core of the coil and tends to raise the pressure in the secondary to such an extent that in order to complete its circuit it will jump across the points of the spark plug, to which both ends of the secondary winding are indirectly attached. In this diagram the primary winding is attached to the armature at one end, and to the insulated arm of the circuit breaker at the other; the other portion of the circuit breaker is attached to the end of the armature, so that when the points are in contact the primary circuit is complete. An extra ground connection, represented by a dot and dash line, is provided for completing the primary circuit without making the current flow through the points of the circuit breaker; this is to short-circuit the primary current, prevent its interruption by the circuit breaker and eliminate the strong impulses in the secondary winding; thus stopping the sparking at the plug.

The secondary winding has one of its ends attached to a ground portion of the magneto, while the other is in contact with an insulated ring from which current is transmitted through a brush and high-tension lead to the revolving segment of the distributor, and from the revolving segment to a stationary segment from which another high-tension lead conducts it to the insulated terminals of the spark plug. Ground connection is made between the cylinders, into which the body of the plugs are screwed, and the ground portion of the magneto, and as one of the points of the plugs is attached to the body portion, and the other to the insulated part, when the current jumps from one to the other the secondary circuit is complete. A spark gap is shown in both of the high-tension magneto systems; these consist of a terminal attached to the high-tension lead to the distributer and another to the ground portion of the apparatus. The two are separated from each other a certain distance; this distance is so great that under normal conditions the current would choose the easier path across the spark plug points; but in case these points

are too far separated, or should a high-tension lead become disconnected, the current would jump across the points of the gap. If the gap was not provided, the close proximity of ground portions of the magneto might cause the spark to pierce the insulation to complete the circuit and cause serious damage thereto.

The condenser of an ingnition system is provided to increase the speed and efficiency of the impulses of the secondary current. When current stops flowing in the primary circuit, the core of the coil is demagnetized. The quicker the demagnetization, the quicker the impulse created in the secondary winding. Now, when the primary circuit is broken, if it were not for the condenser the primary current would tend to flow across the points of the circuit breaker until the distance between them became too great. This tendency would cause excessive sparking and burning of the points, and reduce the efficiency of the secondary impulse. The condenser absorbs the current which flows for an instant after the points are separated, and gives it off again when the points are again in contact.

In the low-tension magneto systems the induction coils are not a part of the magneto, but are generally contained in a box on the dash. In Fig. 4, the primary and secondary windings and the condenser, indicated in the lower left-hand corner of the diagram, are not a part of the magneto. According to the positions of the various parts represented in this diagram, and assuming that the motor is in action, the position of the switch shows that the magneto is supplying current; there is but a single winding on the armature of the magneto, indicating that it is of the low-tension type; the points of the circuit-breaker are separated, indicating that the primary circuit is broken and that a high tension current is generated in the secondary of the induction coil on the dash, which at this moment is perhaps flowing through the high-tension lead to the distributer and from the distributer to the plug in No. 1 cylinder, as shown by the position of the revolving metal segment.

Manufacturers' Communications

FARMERS PROSPEROUS

Jackson, Mich.—Editor Motor Age—I have just returned from a western trip, and find that the immense wheat crop has lined the farmers' purse. It is not an uncommon sight to see farmers drive into town, where they dig down in their pockets and bring out a roll of greenbacks big enough to choke a horse, from which they peel off the price of a motor car almost as if it was an every-day occurrence. The number and character of garages that are being erected in the smaller western towns also is impressive. In many places of 2,000 or 3,000 inhabitants I found fine modern fireproof structures that would do credit to cities of 100,000 population.—F. L. Holmes, Jackson Automobile Co.

YESTERDAY AND NOW

San Francisco, Cal.—Editor Motor Age—There is a great contrast between the letters that we receive from the country agents these days and the ones we were wont to receive 8 or 10 years ago. Looking through some old letters the other day, I came across one that today looks positively funny, but was taken as a matter of course at the time it was written. The date of the letter was February 2, 1901, and it said in part:

Dear Brinegar: I am getting to be a great demonstrator. Have given four demonstrations in the last 4 weeks and can handle the tiller as well as the next one, although I burned out the boiler yesterday and I want you to send some one to fix it up right away. We are having an awful time here with horses. There is a runaway nearly every time I take the machine out, and this in spite of the fact that I do most of my driving over a 2-mile road so I won't meet many new teams. They are talking of passing laws to keep horseless carriages off the roads entirely. In fact, half of my neighbors don't speak to me now.

Today our agency letters look like government crop reports. Wheelock at Fresno is writing about the raisin situation. Over at Sacramento Phillips talks about hops, while Whitmore at Stockton seems worried over the potato outlook. Of course, Mercer at Eureka can tell us all about the lumber market. Today it is the farmer and out-of-town man who is buying the cars. It is the farmer who wants good roads and liberal legislation. It is the farmer who gets arrested most for exceeding the speed limit in the various small towns. But, above all, it is the farmer who demands a good car and knows one when he sees it. He spends more time than any one else reading up motor car literature, and can back a mechanic off the board on technical points. They not only know cars, but they know a great deal of the inside information pertaining to motoring conditions.—E. P. Brinegar, Pioneer Automobile Co.

MOTOR CAR AN EDUCATOR

Richmond, Md.—Editor Motor Age—Advance reports of the official census indicate that property values everywhere are on the increase. The statistics show a large percentage of advance in values. Real estate men attribute this largely to the motor car. They say it has exerted a greater effect upon real estate values than any other modern invention. Not only are values in city property raising but farm lands as well are becoming more valuable. In the city the demand for salesrooms, garages, etc., has accomplished wonders in boosting rentals, while on the outskirts the steady buying of land for factory sites and extensions has had almost a similar effect. People can live further out in the country than they could before the motor car came into general use. Farming values have gone up and hundreds of places located within a radius of 25 miles of cities have found ready purchasers in men who use motor cars as their regular means of transportation. The motor car has become an essential part of the complex life of today, and it is absurd to regard it as purely a pleasure vehicle. It has revolutionized the delivery service of the cities and proven a potent factor in the world's progress. The future of the motor car promises much, for the commercial field is comparatively untouched, while the agricultural outlook is a big one.—Burton Westcott, Westcott Motor Car Co.

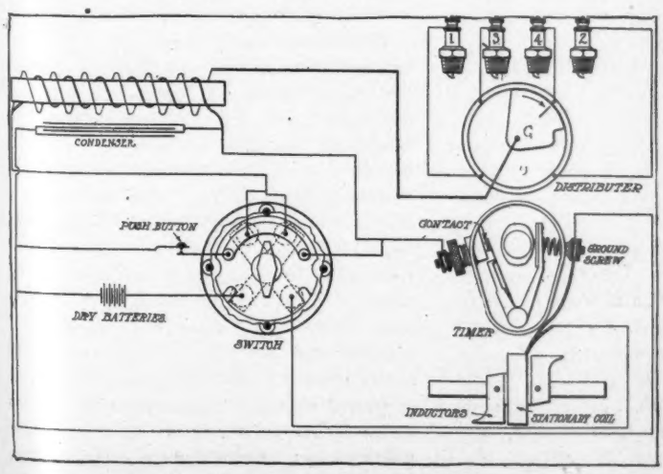


FIG. 3—REMY DUAL IGNITION SYSTEM WITH LOW-TENSION MAGNETO

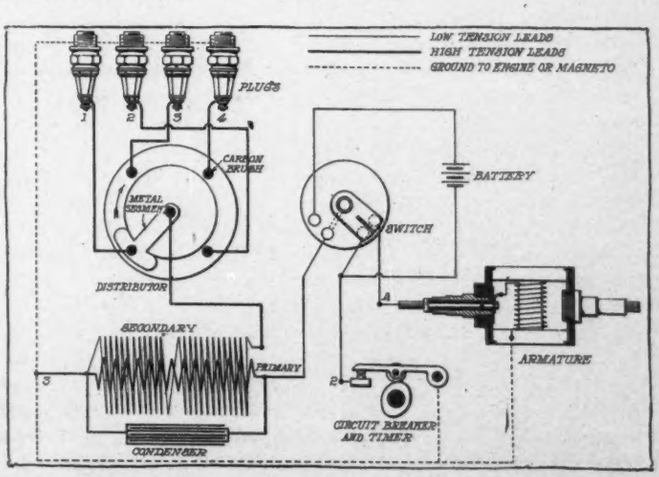


FIG. 4—SPLITDORF DUAL IGNITION SYSTEM WITH LOW-TENSION MAGNETO

Among the Makers and Dealers

THOMAS BRANCH MANAGERS AND AGENTS AT BUFFALO

1, Wolcott, Huntington, W.; 2, Browne, Poughkeepsie; 3, Wells, Sales Department, Buffalo; 4, Jones, Akron, Ohio; 5, Smith, Wheeling, W. Va.; 6, Harrington, Providence, R. I.; 7, Philiatreau, Duluth, Minn.; 8, Van Enstron, Poughkeepsie, N. J.; 9, Austin Heath, Worcester, Mass.; 10, Maynard, New Haven; 11, Arnold, Albany; 12, Paxson, manager retail department, Buffalo; 13, Hand, sales department, Buffalo; 14, Patten, retail department, Buffalo; 15, Wood, Albany, N. Y.; 16, Edwards, sales department, Buffalo; 17, Van Deusen, Buffalo; 18, Harrington, Providence; 19, Arnold, Olean, N. Y.; 20, Henderson, Boston branch; 21, Merriam, Memphis, Tenn.; 22, Arnold, Connecticut; 23, White, Buffalo; 24, Warner, manager, Chicago; 25, Appleby, Atlanta; 26, Fosdick, Dallas; 27, Thompson, Buffalo; 28, Frank, sales department, Buffalo; 29, Thorp, Urbana, Ill.; 30, Wilson, Montreal, Canada; 31, Hurlbut, manager, New York City; 32, Whitten, Lynn, Mass.; 33, Pierce, Des Moines; 34, M. F. Dernberger, treasurer; 35, E. R. Thomas, president; 36, Jaeger, Chicago; 37, McMullen, chief inspector at Buffalo factory; 38, McDonald, factory manager; 39, Frederickson, Omaha; 40, Butterworth, Birmingham; 41, E. L. Thomas, vice-president and general manager; 42, Quimby, Boston branch; 43, Warren, Louisville; 44, Dart, New Haven, Conn.; 45, Snow, Buffalo; 46, Salzman, service department, Buffalo; 47, Halladay, sales department, Buffalo; 48, Nehebas, chief road engineer at Buffalo plant; 49, Henshaw, manager Boston branch; 50, Walker, Kansas City; 51, McKenzie, purchasing department, Buffalo; 52, McDonald, Fredonia, N. Y.; 53, George Thomas, assistant secretary and treasurer, Buffalo; 54, Woodruff, superintendent body department; 55, Lance, Cleveland; 56, Payne, Cincinnati; 57, Kirk, Toledo; 58, Faurote, advertising department, Buffalo; 59, Varrault, advertising department, Buffalo; 60, Field, Denver.

STEWART in Philadelphia—The Stewart & Clark Mfg. Co., of Chicago, maker of the Stewart speedometer, will open a sales office in Philadelphia. It anticipates being able to take care of business there by October 15, and is now negotiating for a salesroom on Broad street. This office will take care of Philadelphia business only.

Republic Tire Expansion—In keeping pace with the demands for its products, and to relieve the congested condition which now exists in its several departments, the Republic Rubber Co. is compelled to erect another five-story building in Albert street, to the rear and left of its new office. The entire building will be occupied by the staggard tread tire and hose departments, and will be one of the largest of the kind in the country, and will mean the employment of 200 or 300 more men.

Mitchell 1911 Plans—The 1911 production of the Mitchell-Lewis Motor Co., of Racine, Wis., will be 8,000 cars. The 1910 production was 5,000. George V. Rogers, secretary of the company, has returned from an extended trip to South America, where several important agencies were placed in accordance with the policy of the company to allot 1,000 cars to foreign territory for 1911. The Buenos Ayres agency for the Argentine territory has been placed with Stnirs Odell Hijos & Co., who take sixty cars; Uruguay, Luis Daglio & Co., Montevideo; Chile, Boza y Rivano, Santiago. Mr. Rogers discovered that a car can be shipped to Buenos Ayres at an expense of $95 in freight, while it costs $150 to ship a car from Racine to San Francisco, U. S. A.

Many Join the S. A. E.—The Society of Automobile Engineers membership will soon pass the 400-mark. The following members and associates were recently elected: Thomas W. Warner, Warner Mfg. Co.; Frank H. Trego, Hudson Motor Car Co.; Elliot J. Stoddard, Detroit, Mich.; W. Rexford Smith, Warner Mfg. Co.; Charles F. Splitdorf, New York city; Alfred J. Poole, New York city; Mathew B. Morgan, Chalmers Motor Co.; James McIntosh, Hercules Motor Truck and Car Co.; Harry Le Van Horning, Waukesha Motor Co.; F. G. Hughes, Driggs-Seabury Ordnance Corporation; O. C. Friend, Mitchell-Lewis Motor Co.; F. C. Frank, General Motors Co.; George Dorris, Dorris Motor Car Co.; John Demmler, Clark Power Wagon Co.; Arthur Dugrey, Holly Brothers Co.; Hugh Chalmers, Chalmers Motor Co.; Eugene P. Batzell, Speedwell Motor Car Co.; Guido G. Behn, Hudson Motor Car Co.; Joseph K. White, French Steel Products Co.; Charles D. Shain, New York city; H. J. Porter, J. S. Bretz Co.; Duncan McConnell, Lovell-McConnell Mfg. Co.; Kenneth B. MacDonald, E. R. Thomas Motor Co.; Charles W. Hatch, Perfection Spring Co.; J. H. Friedenwald, Baltimore, Md.; John Craig, Standard Metalwork Co.; Harry G. Baldwin, W. A. Wood Mfg. Co.; Noble C. Banks, Gear Grinding Machine Co.; William M. Barr, Lumon Bearing Co.; R. Frank Bower, Bower Roller Bearing Co.; Benjamin Byron Bachman.

Making Additions—The Seagrave Mfg. Co., of Columbus, O., in South Columbus, manufacturer of motor fire apparatus, is planning several large additions to the plant. In addition to the extension which is in progress, the company will erect a blacksmith shop 50 by 167 feet and two stories high. Orders are coming in rapidly and the business is steadily increasing. Since the death of C. W. Black, general manager of the company, his son, Benton K. Black, is acting as general manager and probably will be elected to that position at the next meeting of the board of directors.

Will Show Transmission—Clark W. Parker, designer of the transmission bearing his name, plans to make a trip from Springfield, Mass., to Detroit shortly to look over the field there with a view to establishing a plant in that city to manufacture transmissions, and also demonstrate it to a number of motor makers who have been anxious to see it. He will leave September 4, going over the road in the Stevens-Duryea car on which he has placed the transmission. Before returning he will visit several other cities. In some of the demonstrations given in the east he has surprised veterans connected with the factories by the noiseless way he has changed gears while going full speed, or when going downhill by stopping abruptly and back-

ing up. Officials of more than thirty factories have been writing him repeatedly for information and blue prints, but he has not sent out anything.

Patterson Makes a Change—George S. Patterson, who for the past 3 months has been general manager of the Gaeth Automobile Co., of Cleveland, has resigned this position to accept the presidency of a company manufacturing a medium-priced car in Cleveland. Mr. Patterson is now in the east perfecting his selling organization, so it is impossible to secure a definite outline of this new proposition.

Lozier Change in Boston—An important change has been made in the Lozier agency at Boston, Mass. The firm of H. C. & C. D. Castle has been merged into the Lozier Sales Co., of Boston, which will handle Lozier cars in the eastern half of Massachusetts. H. C. Castle, of the old firm, is president of the new Lozier Sales Co. Mr. Prescott is vice-president and E. H. Ellison is another member of the new concern.

Darby Company Quits—At a meeting of the officers and directors of the Darby Motor Car Co., of St. Louis, the affairs of the company were discussed and it was decided to close out the business of the company. The assets of the company amount to $3,400; liabilities, consisting of accounts for machinery, parts, material and labor, $4,500. In addition there are liabilities to the sum of $5,700 with interest, owing to H. G. Dunham, president of the company, for money advanced. Henry W. Blodgett, of Bates & Blodgett, St. Louis, has been appointed trustee for the creditors.

Overland Prospects—According to the statement of George Bennett, sales manager of the Willys-Overland Co., that plant will be running heavier next year than it has for the past season, and it is stated that 25,000 cars will be put out by the company this season. In a recent interview Mr. Bennett, who has just returned from a tour of western territory, said: "In Colorado and Wyoming I closed up contracts for a 40 per cent increase over those that went there last year. Throughout the other western states the increase is in like proportion and in some places considerably larger increases are shown." Mr. Bennett claims to have contracts closed for nearly 25,000 cars. It will crowd the plant to put out so many, but the contracts are made with the dealers to take a certain number every month throughout the year, so that car deliveries will be more evenly divided than is usual. The entire attention of the Toledo plant is now turned to the 1911 cars and up to date about twenty demonstrators have been shipped and about 100 more will be shipped during the month and according to agency contract 545 will be delivered in September. To keep up with the orders it will be necessary during the busy season to turn out 100 or more cars a day. A. A. Atwood, the Overland dealer in Toledo, has just closed a contract giving him the entire state of Michigan as well as northern Ohio, and his contract calls for 1,000 cars.

Castle Move Delayed—The proposed new lamp plant of the Castle Lamp Co., to be erected on Detroit avenue, will be delayed until fall. "We were so late in getting started," said President F. E. Castle in a recent interview, "that we had to give up all idea of moving. We will start the Toledo plant early in the fall and will remove to Toledo shortly after the first of the year." The plant will employ about 500 men, and Mr. Castle expects to bring about 150 of these men with him.

Love Company Assigns—The Love Garage Co., of Columbus, O., made an assignment in probate court recently after a meeting of the board of directors of the company. The concern has been operating a garage and sales agency in a new brick structure at High street and Sixth avenue. E. H. Minnick was named receiver and took charge of the affairs under the orders of the court. It is understood that the affairs of the company are in bad shape and the receiver will attempt to straighten them out. B. F. Myers, Ira Armstrong and Arthur M. Crumrine were appointed appraisers.

Busy at E-M-F Plant—At the E-M-F company an average of twenty-five agents' contracts a day have been approved during the month. Sometimes the agents have visited the factory in person, but most of the work has been transacted by mail, there being very few changes in the personnel of the company's distributing force. On Saturday concluding last week the total of 1911 contracts on file was found to include orders for over 11,000 cars. This figure is exclusive of the cars which the E-M-F company will dispose of through its own branches, of which there are thirty-four in the largest cities of the country. The E-M-F company's factory additions will make possible a greatly increased production in 1911, but the company already is facing a certainty of extreme difficulty in filling the orders which have begun to accumulate at such a remarkable rate.

Winchester An Agent—Walter F. Winchester has severed his connection with the Pierce-Arrow Motor Car Co., of Buffalo, and hereafter will be head of the Winchester Motor Car Co., dealers in Pierce-Arrow cars, at Jacksonville, Fla. Winchester will be remembered best as the pilot of the Pierce-Arrow car that won the Glidden trophy in 1909.

Another Regal Branch—The Regal Motor Car Co., of Detroit, has decided upon establishing its own factory branch in Minneapolis for the distribution of this make of car throughout the northwest. Headquarters have been established at 418 to 420 Third avenue, south. The firm name will be the Minneapolis Regal Auto Co. This is in line with a policy of the Detroit concern to install its own branches all over the United States and adds one more link to its selling organization, which has been undergoing changes for a year or more. The Minneapolis house will be in charge of J. P. McGuire.

Overland Will Carry Mails—Will H. Brown, vice-president of the Willys-Overland Co., with offices at Indianapolis, has announced that the Overland mail cars will continue in the service of the postoffice for 9 more months. Postmaster Robert Bryson and Mr. Brown had experimented with the system and had found it satisfactory. Mr. Brown, however, did not bid again because the government appropriation was not large enough to be tempting. When no other concern offered to bid Mr. Brown consented rather than have the city embarrassed by having to return to the old horse-drawn collecting wagons. Three motor cars are used and each is credited with performing the work of three horse-drawn wagons.

GARAGE PARK AUTOMOBILE CO. AND BROWN BROTHERS AUTOMOBILE CO., ST. LOUIS

Brief Business

HAZELTON, PA.—The Bailey Motor Co. has been incorporated with a capital of $5,000.

Los Angeles, Cal.—F. B. Preston will erect a two-story garage, 20 by 30, in Kingsley drive between Fourth and Fifth streets, to cost $3,500.

Baltimore, Md.—The Moon car is another new entry in the local field. It is being represented in Baltimore by Cooper & Upton, 2312 Madison avenue.

New York—The Cartercar Co., of Pontiac, Mich., is about to open a branch at the corner of Seventy-seventh street and Broadway about September 1, with W. S. Williamson as manager.

New York—D. L. Ormsby, of 451 West One Hundred and Fifty-first street, will erect a one-story brick garage 48 by 98 at One Hundred and Fifty-first street near Amsterdam avenue, to cost $15,000.

Los Angeles, Calif.—The Standard Motor Car Co. will rebuild its garage at Twelfth and Olive streets to give more room for the handling of Ford, Velie and Frayer-Miller cars. The new garage will be 70 by 140, two stories.

Nashville, Tenn.—The Southern Taxicab Co. has secured a charter, with a nominal capital of $2,000. The incorporators are R. D. Ezell, E. J. Clark, L. D. Pennock, C. E. Ezell and W. E. Drake. There already is one taxicab company in Nashville.

Long Island City, N. Y.—The Mercedes Automobile Co. has filed plans for the erection of its new plant on Thomson avenue and Lincoln street. The building will be three stories high, 100 by 123, brick and fireproof construction, to cost $25,000.

Racine, Wis.—Racine stockholders in the Thomas Brass and Iron Co. and allied companies failed to win their fight to have the plants locate at Racine. The factories at Waukegan, Ill., were destroyed by fire recently. They will be rebuilt at Chicago Heights.

Detroit, Mich.—C. H. Haberkorn has purchased a manufacturing site between 3 and 4 acres on the D. and M. railway between Theodore and Farnsworth streets for about $30,000. It is understood that the land will be a site for a new manufactory of motor trucks. It is 300 by 600 feet.

Pittsburg, Pa.—George E. McCogue has let contract for a large garage at Broad street and Centennial avenue, Sewickley, which has been leased for a long term of years by the newly-formed Anderson Automobile Co. The building will be 95 by 171 feet and of reinforced concrete construction.

Wilkes-Barre, Pa.—The following agencies have been appointed by the Matheson Automobile Co.: M. M. Gillett, Smethport, Pa.; Matheson Sales Co., 174 Twelfth street, Oakland, Cal.; W. King Smith Co., Syracuse, N. Y.; L. G. Everist & Son, Sioux City, Ia.; J. R. Todd, New Orleans, La.; Ideal Motor Car Co., Harrisburg, Pa.; J. M. Lopez, Biloxi, Miss.; J. K. Gilchrist Co., 123 East Seventh street, Cincinnati, O.

Binghamton, N. Y.—Smith & Buchanan, of the Excelsior garage, have taken the agency for the Corbin.

Louisville, Ky.—The Kentucky Auto Top Co. has established a plant at 1504 West Market street. It manufactures tops, cushions and upholstering.

Boston, Mass.—The Pullman is again represented in Boston, this time by the G. H. Procter Supply Co., the latter concern taking it on a few days ago.

Philadelphia, Pa.—Mitchell Brothers will construct a brick garage one story on the front with a two-story back building, 40 by 38, on the west side of Sixty-first street, north of Girard avenue, to cost $6,000.

Dayton, O.—A number of Cincinnati capitalists have organized a $50,000 company to manufacture a steam vulcanizer for use on tires which was invented by J. E. Hitch, of this city. The company will be incorporated in the near future.

Seguin, Tex.—The Blumberg Auto Co. is making preparations to build a large garage on part of the Governor Ireland homestead property which the company has acquired. The structure will be of concrete blocks and will include blacksmith and paint shops.

Greensburg, Pa.—Elmer Turner and Harvey J. Shoup, of the Standard Automobile Co., are temporarily located at the Keystone garage in Pennsylvania avenue. Work will be begun this week on a big new garage to be erected for them in South Maple avenue. They have just taken the agency for the Overland.

Pittsburg, Pa.—Fire last week cleaned out the long two-story building running from 4514 Henry street to Winthrop street, Oakland. The building was owned and a good part of it occupied by P. L. Hammett, as a garage. The Federal Motor Car Co. also sustained considerable loss at its plant at 4515-4520 Henry street, adjoining.

Oxnard, Cal.—The contract for the construction of the new building for a garage and a complete machine shop for Milton Stiles, of Ventura, has been let. It will be 50 by 140, with a mission style front, situated at the corner of A and Fourth streets. The main garage will be 100 feet and the shop will extend back 40 feet.

Fond du Lac, Wis.—The Crescent Motor Co. has been reorganized and is now building a large garage on North Main street. The owners are W. C. Reinig, W. A. Meiklejohn and F. G. Hurlburt. The building is 58 by 85 feet, with a repair shop 24 by 60 feet. The old Crescent Motor and Machine Co. went out of existence shortly after the big fire in 1908, when the big garage was destroyed and a total loss of $250,000 was caused to adjoining buildings.

New York—The New York Midland Co. has opened the Midland-Correja garage at 40 West Sixtieth street.

Baltimore, Md.—An agency has been established here for the Manhattan truck, with Joseph J. Smith. The headquarters are in the Vickers building.

Philadelphia, Pa.—The Lorraine Motor Co. is having plans prepared for a three-story garage to be built at Thirty-seventh and Ludlow streets, to cost about $60,000.

Philadelphia, Pa.—The Wayne Garage Co. has awarded a contract for the erection of a brick garage 167 by 69 at 4129 Wayne avenue, Germantown, to cost $4,500.

New Orleans, La.—The Fairchild Auto Co. has opened its new garage at St. Charles and Girod streets. The Peerless, Winton, Marion and Reo, Rauch & Lang electrics and Rapid commercial trucks will be handled.

Cleveland, O.—The Roy Ransom Auto Livery Co. has been incorporated with an authorized capital of $10,000, to operate a motor livery business. The incorporators are Roy Ransom, F. H. Crew, R. T. Baehringer, H. H. Hoard and W. F. Brenner.

Nashville, Tenn.—The Tennessee Auto Co., which already has the largest garage in Nashville, has started the building of an addition in the rear 45 by 90 feet. The addition will give room for enlarged shops and other equipment to be installed.

New York—Among the new dealers who have contracted with the Lozier Motor Co. for the sale of 1911 line of Lozier cars are the following: E. S. Armstrong, Salt Lake City, state of Utah; Lozier Sales Co. of Rhode Island, 64 Washington street, Providence, R. I.; Scranton Auto Co., Scranton, Pa., city of Scranton and vicinity; Weber Implement Co., St. Louis, Mo., city of St. Louis and adjacent territory; Paul

Recent Incorporations

Columbus, Ohio—Case Motor Car Co., capital stock $50,000; incorporators J. H. Grothaus and others.

Dover, Del.—Dover Garage Co., capital stock $5,000; to conduct general garage.

Boston, Mass.—Lozier Sales Co.; capital $50,000; motor cars and motor vehicles. President, H. A. Castle, Brookline; treasurer, J. E. Carroll, Boston.

Pasadena, Cal.—Pacific Coast Motor Car Co.; capital $75,000; incorporators, E. E. Hewlett, Howard E. Huntington, F. Ballard and Joseph F. Kirchhoff. The company will reorganize the G. W. Co. organized by the late George Watson.

Philadelphia, Pa.—Collins Gear and Motor Co.; capital $250,000; to manufacture and deal in motor cars, power boats, portable boats and engines; incorporators, F. R. Hansell, Philadelphia; E. T. Vennell and George H. B. Martin, Camden.

Sandusky, O.—Star Garage and Taxicab Co.; capital $20,000; incorporators, T. J. Herman, J. E. Herman, C. C. Herman and W. L. Finnegan.

Announcements

Kuhn, Terre Haute, Ind., Terre Haute and vicinity.

Brooklyn, N. Y.—The Bruns Automobile Co. has increased its capital from $5,000 to $25,000.

Boston, Mass.—The Whitten-Gilmore Co. of Boston has added another former Studebaker man to its sales staff in Fred W. Nichols, who has been selling motor cars in the Hub for some years.

Somerset, Pa.—Will Lambert has been elected manager of the Somerset Automobile Co. to take the place of Will T. Hoffman, who has resigned that position to look after his timber interests.

Greenville, Pa.—The Greenville Metal Products Co. has increased its capital from $250,000 to $600,000 and will make big extensions to its plant at Greenville, where parts are manufactured.

Beloit, Wis.—J. C. Howell has resigned his position as assistant manager of the Warner Instrument Co. and after this week will be advertising manager for Reed & Barton Co., silversmith, with headquarters at Taunton, Mass.

Boston, Mass.—A. H. Sowers, who formerly handled the Jackson in Boston with the Stevens-Sowers Co., has gone with the Studebaker branch in the Hub, while Walter G. Jones, who was a Studebaker man until a few weeks ago, has accepted a place as superintendent of the Whitten-Gilmore service department at Cambridge.

Boston, Mass.—A change will take place in the handling of the Inter-State and Brush cars in Boston shortly. The S M Supplies Co. has had the agency for them for a year or more and it has decided to drop its affiliation with the motor industry because of a press of other business. Victor M. Charles, manager of the agencies, probably will take charge of the Inter-State branch that is to be opened in Boston. It is expected that the Brush will also be handled as a branch through the United States Motors Co.

Oshkosh, Wis.—James F. Gould, 200 Main street, has been appointed a representative of the Hupmobile.

Pittsburg, Pa.—The McAlister Brothers Motor Car Co., which handles the Cadillac, has moved into its big new building at Baum and Beatty streets, east end.

Baltimore, Md.—The Consolidated Gas, Electric Light and Power Co. will erect a garage at the northwest corner of Monument and Grove streets to cost about $5,000.

Los Angeles, Cal.—The E. S. DeTamble Co. will be exclusive Pacific coast distributor for the DeTamble line of cars covering all of the territory west of Denver, including the republic of Mexico.

New Bremen, O.—The Case Motor Car Co. has been incorporated with a capital of $50,000 to manufacture and deal in motor cars and to operate a repair shop. The incorporators are J. H. Grothaus, Edmund Grothaus, J. F. Landferseik, Louis Huenke and Otto J. Bossel.

Cincinnati, O.—The Auto Steam Vulcanizer Co., of Cincinnati, has been incorporated with an authorized capital of $10,000 to manufacture and sell a steam vulcanizer. The incorporators are: D. F. Detrich, W. P. Hammer, J. E. Hitch, H. W. Bankard and Dwight S. Marfield.

Los Angeles, Cal.—Plans for a new garage on Pico street are being drawn for Leon T. Shettler, who proposes to build a new home for Apperson and Reo cars. The structure will be two stories, but the foundation will be strong enough to support five stories. John W. Swan, of San Diego, will be manager of the San Francisco branch of the Apperson.

Syracuse, N. Y.—The Central City Motor Car Co. is just incorporated at $10,000 to handle the Haynes in Syracuse and central New York. The president is A. G. Williams, of Syracuse; Arthur Hughes, of Elbridge, is treasurer and manager, and W. Curtis, also of Elbridge, is secretary. Temporary quarters are at 376 West Fayette street. The concern will soon build a garage on South Salina street.

Nashville, Tenn.—Deeds & Hirsig, of Nashville, who operate what is probably the largest wholesale vehicle house in the south, have just added a motor car department and as a starter have contracted for 100 1911 Chalmers cars and a large number of Hudsons and Hupmobiles. It secured the agencies for the cars by buying out the Howard-Gregor company and has placed Eugene E. Howard in charge of the department. The Howard-Gregor company has gone out of existence and has had a petition in bankruptcy filed against it by Nashville creditors.

Baltimore, Md.—The Automobile Equipment Co. is now handling the Kisselkar in this territory. The firm is located at 2207 Madison avenue.

Storm Lake, Ia.—William Cunningham, formerly of Burlington, Wis., has disposed of his business at Storm Lake, Ia., to locate at Oklahoma City, Okla.

Cleveland, O.—The Anderson Carriage Co., of Detroit, has opened a branch in Cleveland at Steeres' garage, 10550 Euclid avenue, with G. H. Rempes in charge.

Lisbon, O.—The Business Association has secured a $50,000 motor truck factory which will build a plant here at once. The new concern is headed by A. H. Wyatt, of Cleveland.

Point Richmond, Cal.—Construction has been begun on a garage for A. E. Creason on Macdonald avenue, near Twelfth street. It will be 25 by 100 for the cars and repair of machines, and will cost $2,500.

Nashville, Tenn.—A. F. Parkes, who has for some time been representing the Parry in Nashville, has taken the agency for the state of Tennessee, except the city of Memphis, for the Velie. It will be known as the Velie-Parry Sales Agency and will have quarters at 1207 Broadway.

Cleveland, O.—Papers have been filed with the secretary of state of Ohio increasing the capital stock of the Booth Demountable Rim Co. of Cleveland from $50,000 to $100,000. C. S. Dangler is president and George W. Nahnis secretary of the corporation.

Janesville, Wis.—The Monitor Automobile Works, 204 North Academy street, Janesville, formerly of Chicago, has opened a Los Angeles agency with the C. G. Dwight Auto Co., which will push the Monitor commercial car among the merchants of the western city.

New Castle, Pa.—George A. Wallace, of New Castle, Pa., is at the head of a company composed of New Castle and Cleveland capitalists which has bought a site in Youngstown for $300,000, on which it proposes to build a plant. It is reported that parts will be manufactured.

Cleveland, O.—Frank J. Santry, who has has been in the motor business for the past 10 years and the last 2 years with C. G. Bleasdale in the Maxwell agency, Cleveland, has resigned and accepted a position with Morgan & Williams, of Warren, O., distributers in that section for Maxwell, Oakland, Overland, Oldsmobile and Columbia cars.

Pittsburg, Pa.—Since the Standard Automobile Co. moved to Grant boulevard, a number of other big concerns in the east end have considered sites along the boulevard between the Sixteenth street incline and Thirty-third street. Several of these deals are likely to be closed up this month, so that the garages can be started early this fall.

Recent Incorporations

New York—Moore Auto Skid Prevention Co.; capital $500,000; to manufacture motors, engines, cars, etc.; manufacture devices and appliances for the safety of motor cars; incorporators, F. J. Berry, Orange, N. J.; E. Lewin, M. Wirth, New York city.

Wilmington, Del.—West Side Garage; capital $50,000; to manufacture, sell and deal in and repair motor cars; incorporators, J. B. Krueger, C. J. Brand, W. M. Prutzman, Wilmington, Del.

Wilmington, Del.—Great American Automobile Co.; capital $1,500,000; to manufacture motor vehicles and trucks; incorporators, Samuel Quinn, Jr., Charles N. Lee, L. H. Van Briggle, Indianapolis, Ind.; H. W. Davis, Wilmington.

Cleveland, O.—Roy Ransom Auto Livery; capital stock, $10,000; incorporators, Roy Ransom, F. H. Crew, R. F. Boehringer, H. H. Hoard, W. F. Brenner.

Schenectady, N. Y.—Sterling Garage and Auto School; capital $1,500; directors, Charles H. Tefft of Cohoes; Bert Carl of Saratoga, and Wayne T. Zendt of Schenectady.

Legal Lights and Side Lights

DEFINES REAL RECIPROCITY

THE Automobile Legal Association of Boston was notified last week that Attorney General O'Malley, of New York state, had rendered an opinion that motor cars bearing registrations of Massachusetts, Connecticut and Vermont did not come under the reciprocity clause of the New York law and therefore motorists from those states would have to register their cars to operate in the Empire state. William A. Thibodeau, counsel for the association, got busy to find out about it and he learned from Albany that the attorney general based his opinion on the fact that any state that does not grant New York motorists freedom to operate unrestricted does not grant real reciprocity in the meaning of the law. As the Massachusetts, Vermont and Connecticut laws say that visiting motorists may operate but 10 days in any one year, that shuts out the New York motorists after that period, and so placing the restrictions on them the New York law gets back at the motorists from those places.

Rhode Island and New Hampshire, too, will come under this decision. Maine is the only one of the six New England states that places no restrictions upon visiting motorists. When the news became known in Boston it created much surprise among motorists who thought that the 10-day clause in the Massachusetts law would mean that they would have similar privileges in New York state. At the time the Bay state legislators were having hearings on the motor law it was pointed out repeatedly that to put up the bars with a definite time limit would not be real reciprocity, and that other states eventually would retaliate so that the burden would fall upon the Massachusetts motorists. Now the motorists find that their legislature blundered in spite of what had been shown them.

As many Bay state motorists are now in New York state, they may be held up. Others who were planning a trip there will change their course when they find they will either have to register or stay out unless they want to take a chance to pay a fine. This will have some effect upon the grand prix and Vanderbilt races, for many motorists from New England attend those events, but now they will stay away if the law is enforced, and with the attorney general's opinion to go by it is very evident the police will not hesitate to do something. The A. L. A. notified its members right away and as a consequence not a few of them who were planning trips have changed their routes and will go to the mountains instead of westward.

The Massachusetts highway commission has not taken any action on the decision yet, though it has been apprised of it. The commission will wait until it is seen whether New York officials enforce the law against Bay state motorists. If that is done, no doubt the 10-day limit now allowed New Yorkers will be withdrawn. Other New England states may do the same and so there will be a war between New York and New England officers, with motorists getting the worst of it every time. Bay state motorists may now get some idea of how New Jersey motorists feel when they have to ante up the moment they enter Massachusetts, for this opinion puts the Bay Stater touring New York in the same class as the New Jersey man touring Massachusetts. That the whole thing will have to be threshed out again before the next legislature seems likely, and then perhaps the motorists will get a real instead of an imaginary motor law.

RACINE WILL TAG DRIVERS

In spite of strong opposition, the common council of Racine, Wis., one of the motor industry centers of the middle west, practically decided to license operators of motor vehicles. The ordinance has passed first and second readings in the council and there is now no doubt that it will fail of passage in committee of the whole at the next meeting of the council. No person under 16 years of age may operate a motor vehicle in the city of Racine and no person shall operate or drive any motor vehicle unless he or she shall hold a license so to do. Racine is the first city in Wisconsin to attempt to license drivers and the fact that such action should be taken in one of the best known motor centers in the west has caused much speculation. The excuse for it is that there has been too much reckless driving, and that by the regulation afforded by a license method, this will now be stopped. The ordinance is not as severe as it appears, however, for the proceedings prior to revocation of a license are so arranged that the complainant, lest he be a police officer, will hardly risk being brought into the public eye.

NEW LAW IN GEORGIA

The Georgia legislature, which adjourned last week, passed the first state motor bill on record in Georgia. It is a mild document in the main and met with no objections from the motorists. The bill provides for state registration and numbering of cars, fixes no definite speed limit and departs from the ordinary in providing that no person shall throw glass, nails or other obstacles in the way of a machine, and that no person shall give a signal of distress to a motor-car driver without cause. Other provisions are: The law becomes effective September 1; the registry fee is $2; the secretary of state will issue to every registered car a metal seal, which must be displayed at all times; the secretary will also issue a number plate, with figures not less than 3 inches high; each car must be provided with one front light and one rear light; the front lamp must throw light not less than 100 feet in the direction the car is going; the rear light must be red.

The speed provisions follow: "In using the highways of the state the driver of the car shall proceed at a reasonable and proper rate of speed and with due regard for traffic. When approaching crossings, bridges, embankments, curves or dams the driver shall have his machine under perfect control and shall proceed at a rate of speed not greater than 6 miles an hour." When approaching horses the driver of the machine shall signal with his horn. If the person driving raises his hand the car must be stopped. If the animal appear frightened the motor must be stopped entirely. No intoxicated person and no person under 16 years of age shall be allowed to drive, with the exception that a person under 16 may drive if he has had 12 months' experience and is accompanied by the owner of the machine. Non-resident motorists are exempt from registration for 30 days, provided they have complied with the regulations of their own state.

HELPS THE TOURISTS

To enable New Jersey motorists who are in the White mountains and who wish to cross the Bay State without being arrested, and also to enable those about to cross Massachusetts on the way north to go through all right, the Massachusetts highway commission has authorized the various police chiefs in Springfield, Pittsfield, North Attleboro, Lowell, Newburyport and Greenfield to issue licenses to the visitors and collect the fees so that a trip to Boston may not be necessary. New Jersey motorists have been arrested in Massachusetts for not being registered in the Bay State, and some of them stated that they were on the way to Boston to register their cars and that it was not fair to hold them up. It was decided by the commission that it would be only fair to give the visitors a chance and so the police chiefs will do the work. If a man has a big car he will find it is rather expensive to pay $25 just for the privilege of crossing Massachusetts once or twice.